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THE MAGAZINE OF THE SOCIETY FOR TECHNICAL COMMUNICATION

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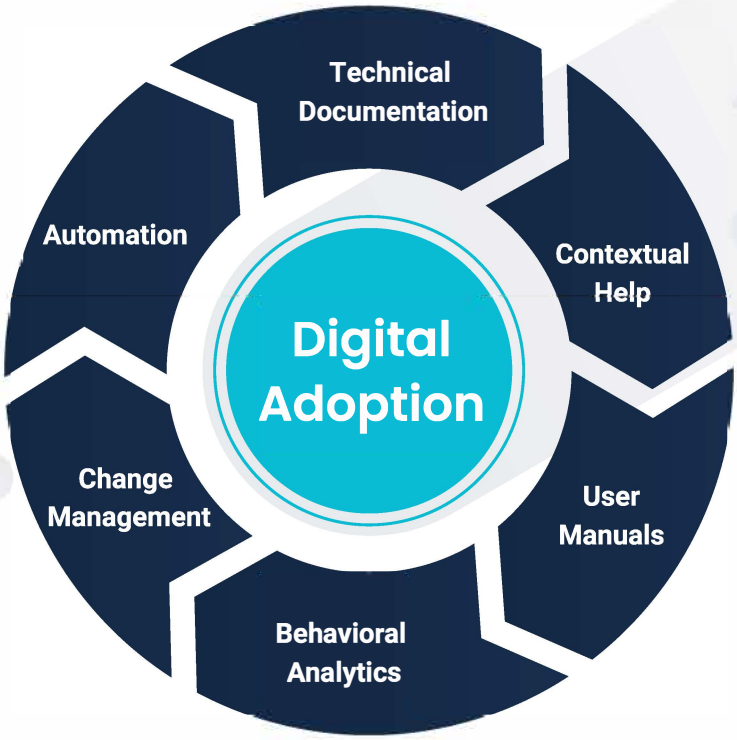

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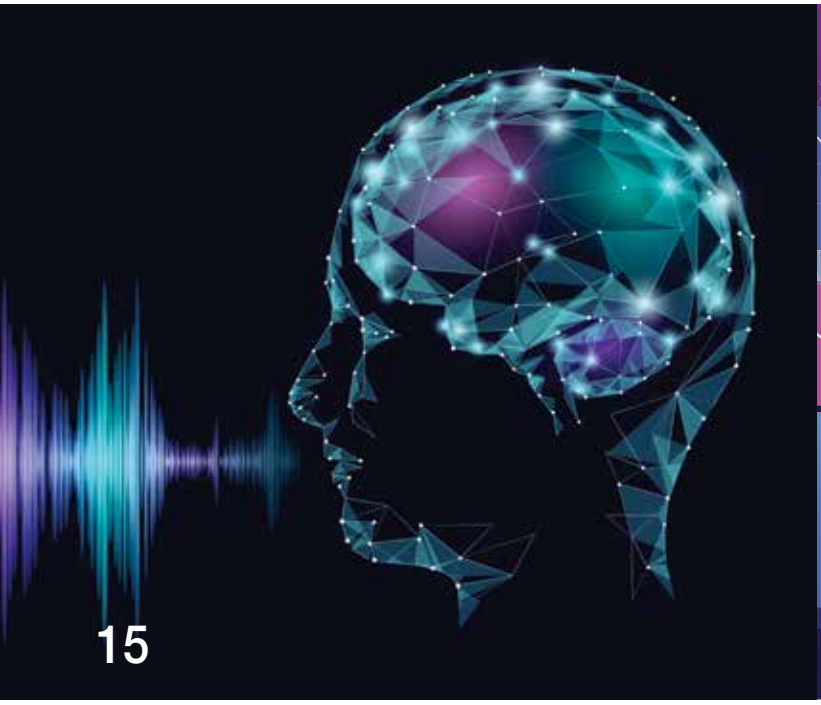

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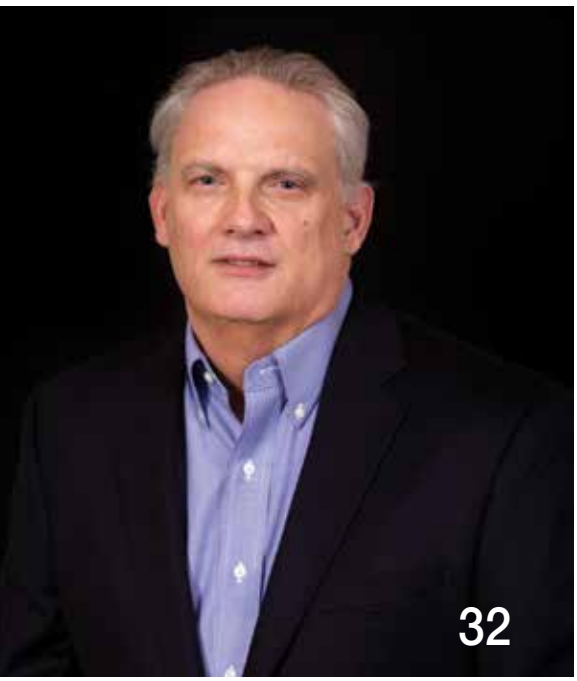

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A Note from the Editor

ARTIFICIAL INTELLIGENCE (AI), chatbots, conversational interfaces, deep learning, robots—if you haven't been living completely off the grid for the past two or three years, it probably seems clear that the machines are taking over. Or are they? And even if they are infiltrating, have we lost all control? Is there nothing we, as technical communicators, can do? Better question: is there something we *should* do?

I contend that if you are an excellent technical communicator, then *the skills that got you here will get you there.* Whether you're creating content for an Alexa skill or training IBM Watson, the intended consumer of your knowledge and information is, eventually, a human. As we always have, we must use our advocacy, research, strategy, architecture, design, development, and delivery skills to create the right content and present it exactly when and where the right people need it. The storage format might be different. The chunks might be smaller. The delivery medium might be new. The interactions might be unknown—for now.

As the outstanding authors in this issue demonstrate, our abilities to understand, synthesize, empathize, and innovate will help us over this learning curve—as they did when we moved from typewriters to word processors, from print to online, from adjunct to embedded, and through every other transition and transformation this industry has faced. We will arm ourselves with our core skills; learn, learn, learn; and master this new challenge.

To the "learn, learn, learn" point, let me provide you with some new ideas to ponder and some new skills and tools to try out, brought to you by this fantastic lineup of articles.

Ray Gallon, CEO of the Transformation Society, starts off the issue by getting us thinking deeply about the ethics of content in the new world of AI, conversational interfaces, robotics, and all that is Information 4.0. He challenges us to consider ethics more rigorously in our work in light of our new machine-based reality.

Eric Reiss, CEO of the user experience (UX) company FatDUX Group, discusses why we should, and how we can, create shared references—not only for traditional content and interactions. He makes it clear that a lack of shared references will only be a bigger problem in a future with machines.

Cruce Saunders, Founder of [A], wrote an amazing piece for his "Content Engineering" column—so good that I moved it into the features lineup. He provides an argument and vision for the next generation of authoring in our industry—for both human and machine consumption.

Marianne Macgregor is a User Assistance Development Architect at SAP, and she leads a corporate-wide team to bring conversational AI to the user assistance (UA) teams at SAP (and beyond). Her case study provides a great starting point for any team attempting to skill up in this space.

Rahel Bailie, content strategist and instructor of content strategy, lays down the ContentOps gauntlet and challenges us to implement content operations to optimize our organizations. Thankfully, she provides her tips, as well—all based on an excellent content strategy, of course!

Alex Masycheff, CEO of Intuillion Ltd., provides a useful perspective on tools to help us make chatbots *really* helpful. If you weren't sure what ontologies are, or how structured content, user context, and ontologies play together, you're in for a treat!

And for our last (but certainly not least) feature, Ondrej Sirocka, product manager for the Kentico content management system, gets practical, bringing us his tips and tricks for writing conversational interfaces—all hard-won through the experience of completing his own conversational projects.

And if that's not enough knowledge, I also have three columns for you in this issue:

- Scott Abel interviews Deborah Bosley in "Meet the Change Agents," who gives us the plain truth about plain language.
- In "Editing Matters," Michelle Corbin drops her super-editor tips and tricks for those of us not lucky enough to have a super-editor of our very own.
- Kirk St.Amant addresses attention—how to hold it and keep it—in this issue's edition of "The Cognitive Communicator."

> As we always have, we must use our advocacy, research, strategy, architecture, design, development, and delivery skills to create the right content and present it exactly when and where the right people need it.

And, as always, don't forget to check out the Society pages!

Finally, let's have a conversation! We've included author and columnist email addresses so that you can get in touch. My email address is here, too! We can also discuss articles and issues with you online, so we hope that you'll ask a question or start or join a conversation!

Until next time: to your wild success!

— Andrea L. Ames
andrea@idyllpoint.com

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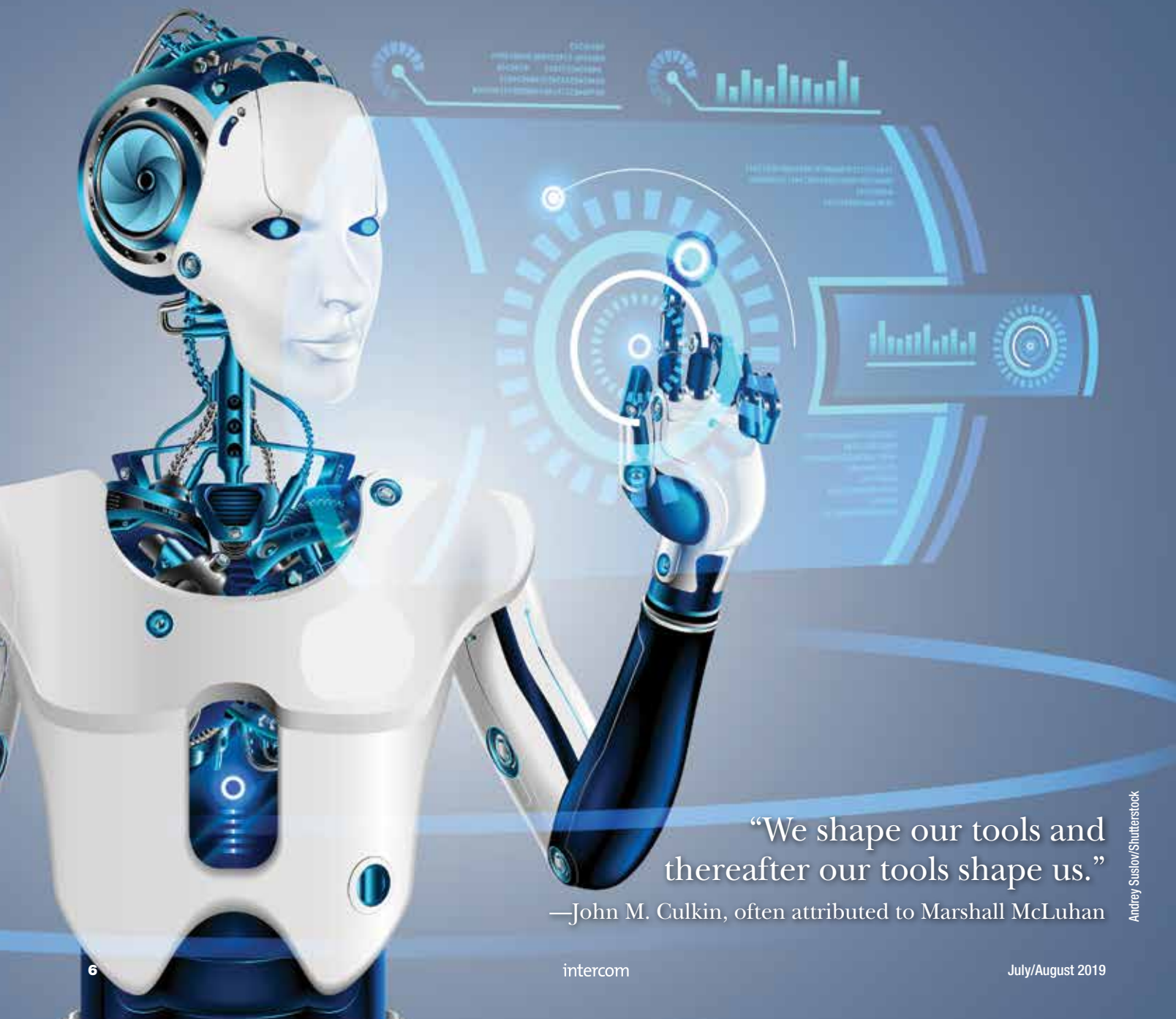
Whom Do You Kill?

By RAY GALLON | *STC Associate Fellow*



"We shape our tools and thereafter our tools shape us."

—John M. Culkin, often attributed to Marshall McLuhan

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ANYONE WHO HAS seen Stanley Kubrick's *2001: A Space Odyssey* would have a hard time believing the notion, once taught in engineering schools— especially in the United States—that engineering solutions are socially neutral. Our constructed environment shapes and conditions us at the same time that we're engaged in inventing and reinventing it. The advent of a connected world via the Internet has clearly shown how technological innovations affect social behavior, and how that social behavior then leads to the creation of new utilities that, once again, modify the way we live and interact with each other.

Enter the world of connected objects, otherwise known as the Internet of Things (IoT), and its enormous capacity to capture Big Data. Add the power of artificial intelligence (AI) into the mix, and we have to start asking, "What does it mean—not just in economic or labor terms, but for human society, if we have inanimate but 'intelligent' machines interacting with us, just like other members of our work teams, communities, or even our families?"

The so-called "fourth industrial revolution" is marked by the fact that for the first time, machines not only help us to make decisions, they decide in our place. Those of us who labor in the information trenches are finding that our jobs are changing rapidly. We must learn to write in a different way, we need to know how to find and curate information from disparate sources and concatenate it in meaningful ways, and we need to tailor our information to specific personal needs and contexts, even so far as to adjust for users' emotions.

The New Reality of Content

These seemingly science-fictional requirements are already becoming day-to-day reality for some of our colleagues, and will likely become the norm within a very few years. The delivery of this kind of highly contextualized, highly personalized information on any kind of scale presumes that artificial intelligence will be in charge to a large extent. And that suggests that one of our most important tasks, as specialists in information design, creation, and delivery, will be to ensure that what gets delivered is appropriate, accurate, useful, and makes sense to the user.

Above all, we cannot let machine-generated errors become responsible for creating gender, ethnic, racial, or ability-based biases, or for endangering life, health, or safety. In short, we carry a heavy ethical responsibility on our shoulders. The way in which we carry out that responsibility will have a huge impact on the role we play, and its importance, inside our organizations.

The recent problems with the Boeing 737 Max-8 aircraft have pointed out how absence of a simple warning light that informs pilots of anti-stall system malfunctions can prove fatal (CBS News 2019). As we depend more and more on automated systems, it is important to understand that information has multiple roles. It continues to be important in aiding users to learn how a product works, and to eventually become experts in its use. But information also has a vocation toward product managers and design engineers; it is critical to the interpretation of Big Data pools, and is key to the proper sharing of responsibility between humans and machines.

So Whom *Do* You Kill?

As an example, let's take a question that has become almost a cliché in the post-AI world, the "whom do you kill" conundrum for self-driving cars. This problem is usually posed as a binary choice: If a vehicle is faced with the choice between striking a group of pedestrians, almost certainly killing them, or striking an obstacle, almost certainly killing those aboard, which should it chose? Researchers at the Massachusetts Institute of Technology (Awad et al. 2018) set up a "moral machine" to investigate whether any global ethical principles could be determined, based on how people responded to a series of different binary "dilemmas" where they could chose according to criteria such as:

- Age
- Gender
- Physical condition
- Human or animal
- Many or few

The results provide an interesting cultural study, which I recommend to readers. But it strikes me that the binary fashion in which these dilemmas have been posed is significantly mistaken. Most human drivers, faced with one of these hypothetical situations, would seek to avoid killing anyone, regardless of what preferences their given cultures might have for any one of the criteria above. The human brain is a very powerful instrument that responds intuitively with reflex actions that we have not "reasoned" out in the way participants in the "moral machine" did. The sad truth is that sometimes, even if we seek to avoid killing anyone, deaths do occur.

Can we program a machine to avoid killing anyone? The most powerful deep learning algorithms, coupled with their machine hosts, have the complexity of a bee's brain—nowhere close to our own capacities. However, if restricted to a narrow domain of action, their ability to calculate and extrapolate makes them capable of feats far in excess of our own capacities—but only in that domain. A specialized AI should be capable of being *better* at avoiding automobile-related deaths than we humans are. *If it can't do that, we shouldn't be letting driverless cars onto the street.*

One might argue that once the majority of cars are autonomous and interconnected, the intelligent IoT network will reduce the number of situations in which such a call needs to be made, and that's almost certainly true—cars will be spaced, speeds will be more regular, overall traffic flows will be more fluid, emergencies less frequent. But no matter how good our machines are, some injuries and deaths will still occur due to road accidents,

and human error will continue to play its part in them. How willing are we to accept this fact? Who will bear liability for insurance claims? Will it be the car manufacturer? The software publisher? The programmers? The car owner? We don't have clear answers to these questions at this time, but we can be sure that insurance companies are working out their particular approach to them right now.

When we have surgery in a hospital, we recognize that sometimes patients die—their condition was too far gone, or on occasion, a surgeon makes a mistake. When we are operated on by medical robots, which exist today, are we prepared for anything less than a 100 percent success rate? What criteria will we apply for medical malpractice by a robot?

Ethics and Social Impact in Technical Communication

Above all, whatever directions society decides to take, how will we explain this to the new owner of a driverless car? How will we prepare patients before being operated on by medical robots? What information should we be giving them, how should it be written, and to what extent should technical communicators be discussing subjective issues like ethics in their documents? Are we prepared to tackle this new responsibility?

At the time of this writing, few, if any, of the technical communication programs in universities and other post-secondary institutions have a unit on ethics. I believe they should all have one, and that ethics should be an essential part of every technical communicator's education.

The authors of the "moral machine" study offer this thought:

> *Never in the history of humanity have we allowed a machine to autonomously decide who should live and who should die, in a fraction of a second, without real-time supervision. We are going to cross that bridge any time now, and it will not happen in a distant theatre of military operations; it will happen in that most mundane aspect of our lives, everyday transportation. Before we allow our cars to make ethical decisions, we need to have a global conversation to express our preferences to the companies that will design moral algorithms, and to the policymakers that will regulate them* (Awad et al. 2018).

The blogger known as "Writingprincess" takes a different tack. She is design research lead for Ideo and has been working on AI for a long time. She thinks we should stop using the word "ethics:"

> *By definition ethics is transient, it changes with the make-up of the group creating it. So by definition "ethics," [SIC] are going to be different culturally, which is why it's a bad framework for trying to tell people how to design future technology that's to be used universally…*
>
> *[Autonomous vehicles] do not "recognize," individual pedestrians as much as they recognize the speed of every object in their path and judge based upon criteria like rate of speed, height, distance traveled, etc., to determine if an "object" is a person or a car. Right now, it doesn't care if it's a black person, a woman, a cat, or a dog. And it's probably good to keep it that simple* (Writingprincess 2018).

She goes on to suggest that the best way to proceed is with "mindful" or "human centered" AI design that combines humans and AI in a hybrid pair, with the AI designed first and foremost to serve human needs. "When you follow that line of thinking you don't have to slice and dice all those different dilemma scenarios" (Writingprincess 2018). The assumption that "autonomous" means that humans never interact with, or override, AI decisions is mistaken. Humans and machines must, and most certainly will, collaborate, and when there is doubt, the humans should take the lead.

As technical communicators, content strategists, information architects, knowledge managers, and other specialists in the information domain, we must also be prepared to take the human role—to face and explain to our users the difficult debates, tough decisions, and multi-dimensional dilemmas that new technologies are throwing in our paths—and to help them to use our products well. This means they use them for some good purpose, to serve humans, and without doing humans any harm.

RAY GALLON (rgallon@me.com) *is President and Cofounder of the Transformation Society, which provides training and consulting around digital transformation and organizational learning, and currently teaches at the universities of Barcelona and Strasbourg. He is Co-Chair of the Transformation and Information 4.0 Research and Development group of the World Federation of Associations for Teacher Education (WorldFATE). He is an Associate Fellow of STC and formerly an STC Board Member and President of STC France. Ray has over 40 years as a communicator, first as an award-winning radio producer and journalist (CBC, NPR, France Culture, Radio Netherlands International, Westdeutscher Rundfunk, Deutsche Welle), then in the content industries. Ray shares his life between the south of France and Barcelona, Spain, and you can follow him on Twitter @RayGallon.*

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THE ART AND SCIENCE OF Creating Effective Shared References:

The Simple Secret to Increasing Conversion and Reducing Misunderstandings

By ERIC L. REISS

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IMAGINE I AM HOLDING in my hand an ordinary 60 watt lightbulb. The bulb is made of glass and is roughly 10cm (approximately four inches) tall including the aluminium "E27" screw-in base. This stands for "Edison 27mm," which was the standard introduced in 1909 by Thomas A. Edison and licensed under General Electric's Mazda trademark. In other words, an ordinary 60 watt lightbulb.

Now close your eyes. Can you see my lightbulb in your mind's eye? An ordinary 60 watt lightbulb. Got it?

Great. So, let me ask you some questions.

What color is it? Is it frosted or clear? Is it 110 volt or 220 volt? Is it broken or burned out?

Chances are you had a fairly clear picture of a lightbulb in your mind but didn't ask these questions. That's because there is no common conception of "ordinary." What represents an "ordinary 60 watt lightbulb" to you might not be the same as that imagined by another reader. What's more, I tricked you into thinking you got much more detail than you actually received—all the stuff about the E27 screw-in base is true, but it lulls you into thinking you have a better idea of what I'm holding than you actually have.

Quite simply, we lack a shared frame of reference.

Marketers and developers love to talk about obscure features yet often sacrifice important basic information

along the way. One hears them cry, "Oh, we don't have to say that. Everyone knows that already." Sadly, the communication suffers as a result, so don't let them talk you into this nonsense. In other words, don't waste time (and space) explaining the history of the E27 base if this detracts from other important details.

Lack of shared references reduces conversions (people don't buy things blindly), increases the need for help-desk assistance, and can dramatically decrease customer satisfaction. This article will (hopefully) get you to acknowledge the problem and start to review your own work in a new light. When you start to think about this, you'll be amazed by the head-slapping moments you'll begin to identify—from deciphering the cryptic messages you receive from public institutions to understanding cryptic menu options at a fancy restaurant.

The 80-20 Rule of Usability

Having observed usability tests for over 30 years, I've come to the conclusion that failing to establish a firm, shared frame of reference with users accounts for more than 80 percent of the problems that I see. People are confused. They don't really understand what they are reading, there are questions left unanswered, or they simply don't know what the writer and/or designer intended for them to do. Worst of all are sites, apps, manuals, etc., that simply fail to recognize the user's true needs at any given moment.

The other 20 percent usually relates to technical glitches such as broken links, bits of code that are fighting each other in some hidden backend system, servers and other hardware that fail to work as designed, and so on. In many instances, one can argue that these problems, too, are related to a lack of shared reference—not between humans, but between machines. And as we enter the age of artificial intelligence, these problems will only escalate if we don't start doing something about them now.

The Four Keys to Creating Great Shared References

Building solid shared frames of reference isn't difficult, once you see the problem. This is what we, as writers, need to do:

- Don't take anything for granted. Not everyone understands things as well as you do. And even if they do, they always appreciate the confirmation of knowing that you understand things, too. Complacency is a big issue in technical writing today.
- Answer the questions that you expect people to have. Make sure you don't skip any of the basic information they will need. Strangely, many companies have a very poor idea of how their products and services are actually being used. If you don't truly understand a user's needs, you will never answer their questions satisfactorily.
- Anticipate the questions they didn't think to ask! You can check this by reading your text aloud to a friend (but not necessarily a subject expert). Have them ask questions. Probe. Ask them questions, too. You will often be surprised by what they come up with!
- Keep in mind the specific communication environment. This will provide context for your message—context that either requires a more detailed explanation or context that permits you to make some reasonable assumptions.

"What" and "Why" Are Key Questions to Answer

In addition to the fairly obvious "What are you trying to tell me?" the second big *what* question asked by users is "What do you want me to do?" Although we writers and designers may have a clear intention, if users do not share this understanding, things are going to go horribly wrong.

I found this rather amazing text on Samsung's website in roughly 2005:

We may send information on products and promotions in conjunction with our business partners. Please check this box if you do not want to receive this? Yes, keep me informed of the latest news on Samsung products, special offers, contests with fabulous prizes, and events.

This curious text was followed by just a single checkbox. What do you think will happen if you click it? (Personally, I'm impressed that they managed to work in so much confusing messaging and marketing blather in so few words.)

"Ah, but that was years ago," I hear you cry. "We wouldn't do this today." Well, here's an example circa 2019 from a major U.S. airline: "Do you want to print or receive your boarding pass by email?" I was given two choices: "Yes" and "No."

Hey, this isn't really a yes-or-no question—it is phrased as an either/or question. Clearly, I want a boarding pass, but is the site going to help me print it, or do I need to download it and print it from one of my own applications? I don't know.

Without a shared understanding of "What," things are never going to go well.

And that brings us to "Why."

"An error has occurred. Please try again."

We've all experienced messages like this when submitting information of some kind, but we don't know why this happened. Did we make a mistake? Did the server make a mistake? A little extra information would help us understand. After all, if we made the mistake, there's no point in repeating it, so give us some guidance. Again, we lack a shared frame of reference with whomever/whatever sent us this message. Surprisingly, these kinds of "microtext" are often left to developers instead of being reviewed and edited by professional writers.

There's a wonderful sign in one of Copenhagen's many public parks: "Please keep off the grass. Walking over this area will damage the flower bulbs." This lovely message explains the "why"—it's not just because some nasty official wants people to stick to the paths; it's to preserve a wildflower area in a park that pretty much lets you walk anywhere you please.

Fear. Uncertainty. Doubt. FUD.

FUD is always a problem we want to avoid in technical communication—like the fear on the part of users that they will break something or lose data, the uncertainty that the action they are about to take will actually help them accomplish their goal, or the doubt that whatever they are about to do will truly solve their problem. Without a proper shared frame of reference, FUD flourishes and users are constantly frustrated and frequently angry.

Text, Images, Sounds—The Three Tools in Our Kit

Obviously, text is incredibly important. I'll assume you know how to write, and since you've read this far, you've probably figured out the gist of my simple message. It's all rather "in your face" once you recognize it.

The problem I often encounter is that someone higher up in the organization has decided that "People don't read on the Web." Actually, they do. Or, "Text should only be 10 lines." Er, no. The King of Hearts from *Alice in Wonderland* knew exactly how long a text should be: "Begin at the beginning. Go on until you come to the end. Then stop." It's really no more complicated than that!

Images—photos, graphics, videos—can be a huge help in explaining things that are difficult to put into words. Although pictures are rarely worth 1,000 words, they can help. You can use photos to show how an unusual device is used (for example a vacuum cleaner designed to be worn like a backpack), or how large something is by placing it near an object of a generally known size (a hand, a common coin, a piece of fruit, etc). Remember, though, that pictures and text supplement each other; this is not an either/or situation.

I am amazed at how many companies forget the importance of these shared-reference images. For example, I live in Denmark and need a Danish keyboard on my laptop. But the photos on most websites are of American keyboards. Alas, when incorporating the three extra Danish letters, Æ, Ø, and Å, sometimes keyboards are rearranged in ways that are disastrous for touch typists. And that is why I am always forced to buy laptops I can actually see in person in a store. Ugh.

Sounds may or may not be important. Whether you need to highlight these is up to you, depending on your audience. But if a noise level or a notification sound is critical in some way, you'll probably want to let your users/readers/customers hear things for themselves. As always, it's about creating a solid shared reference.

If Content Is King, Context Is the Kingdom

Today, we are approaching the age of "Information 4.0." Basically, that means that chunks of content are being chopped up into smaller chunks that can be recombined to provide a more "personalized experience." Sadly, each time you cut a piece of content into smaller pieces, you invariably lose some of the context. Providing this additional information will be one of our great challenges in the coming years. And that brings us to metadata.

Garbage In, Garbage Out

For machines, "context" is provided through metadata—data about data—such as keywords and other tags that help describe a content chunk. Thus, the more you chop up something, the more metadata is needed to make sense of the pieces.

Let's be honest, creating metadata is pretty boring, yet without it, so-called "artificial intelligence" has no chance of understanding how to deal with all of those pieces. The AI engine simply lacks the shared frame of reference needed to make sense of all the bits and pieces. As a result, we often see very odd information. My favorite is an airline seating plan I found where the seats are from one type of plane and the outline is for another type of plane. As a result, some of the seats are actually shown outside the fuselage!

Clearly, these are two pieces of information that don't belong together. It would seem that the airline substituted a different plane for this flight segment, but the electronic mechanisms that displayed the seating information didn't know to swap *both* content elements—they just changed the seating chart.

Because the creation of metadata is so time-consuming, eventually, artificial intelligence will start tagging things automatically. Great. But we, as humans, will have to maintain oversight. For example, I once found a sign for an English pub called "The Squirrel" with a big image of a rooster. I'm sure some pub owner thought this was very funny. However, if the machine thinks that a squirrel and a rooster are the same thing, we're going to run into problems. Heading off these problems is the second challenge we will have to face in the era of Information 4.0.

In the end, it all boils down to building effective share references. It's a remarkably simple concept when you think about it. And hopefully, you will, because your professional technical communication efforts can truly help make the world a little less frustrating.

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In more mundane lives, Eric has been a two-term President of the Information Architecture Institute and Professor of Usability and Design at IE Business School in Madrid, Spain. Today, Eric is CEO of the FatDUX Group in Copenhagen, Denmark, a leading UX company with offices and associates in over a dozen cities worldwide. He also has several books to his credit, including the best-selling Usable Usability, *which is now available in five languages. You'll find him on Twitter at* @elreiss.

Next-Generation Authoring:

PureSolution/Shutterstock

Creating Content for Human and Machine Consumption

By CRUCE SAUNDERS

DURING THE PAST 25 YEARS, technical communicators have had to adapt to several major shifts in the content landscape. In a simplified timeline, we would illustrate content moving from paper-only to the Web, to mobile, and eventually to conversational outputs, including personalized text variants and chatbot dialogues. Out of necessity, many internal publishing groups have moved away from waterfall workflows that resulted in one-time publish events of PDF versions or paper publications. In response to market demands, teams have moved toward authoring content in more agile and iterative workflows. Authoring and management workflows evolve as communication requires more updates across more channels, as well as action in response to swift, incoming consumer feedback.

We have all been forced to make progress toward an omnichannel, real-time world that arrived before anyone was really ready for it, but really, we are just getting started. Now, we face a *huge* mind shift. The ways we create and prepare content for publishing will fundamentally change, because we no longer write only for human audiences. Our consumers now include machines. And the machines need to understand and use our content just as effectively as humans.

Preparing content for machines takes real planning, work, and coordination. We know this because preparing content for humans requires the same kind of effort. As part of human content strategy, it is a best practice to create customer journey maps that plot out which messages map to which *human* audiences. Similar journey maps will need to be created for *machine consumers*, too.

Machine consumption ultimately leads to some type of content consumption by humans, but the needs of machines are different, and we must master techniques to optimize delivery to this alternate audience.

Machines that actively work to consume our content include bots indexing for Google and other search engines, content aggregators, intelligent assistants, and social media syndicators, as well as many others listed later in this article. All machines ultimately aim to drive efficient human consumption.

Humans demand accessibility, comprehensibility, and creativity. Machines demand structure, relatability, and specialized metadata. Both humans and machines consume content, and the more coherent and complete our content is, the more consumption we will facilitate for humans and machines.

Old Habits, New Models

Outside of techcomm (and even within many techcomm teams today), the majority of content is still authored with tools and processes that engender a "page-presentation" worldview. Content authoring paradigms have followed some familiar patterns:

- **Authoring in unstructured Word or Google Docs**: Although we may consciously think about mobile devices and other output while we write the first draft, or narrative flow, a white, rectangular screen does resemble a sheet of paper. The end-user experience consuming the content will often be quite different than reading from a page or a laptop screen in a stationary position. It will move, be driven by thumbs, be spoken, and need to adapt.
- **Authoring against wireframes**: Although we know content has to live across many templates, and in many forms, we end up "inserting content here" into wireframes or other experience-planning layout tools that introduce containers for content. Since much of our original source content is still authored in a space resembling a page, when we copy and paste from that source into such layouts, the content is not optimized for the delivery destination.
- **Authoring in design and layout tools**: Although traditional authoring tools were designed for static, print content, many of us still manually paste and manipulate content with InDesign or similar, template-layout environments. With authoring tools in which layout, formatting, and graphics take precedence over text, fixed-aspect *visual* context becomes the context that matters most. Unfortunately, that leaves behind myriad other potential forms of consumer context, including segment, location, timeline, and device.

Technical content sets are far more structured than non-technical sets. Within the technical content community, various approaches are in use.

- **Rapid semi-structured authoring**: Using Markdown, or fixed style guides in Word, this offers a basic structure that's useful for authoring independent of a development environment or formal editor. Although this type of content has useful structure for portable machining, by itself it is far from optimized for machine consumption, semantic enrichment, or for intelligent processing through a customer-demand workflow.
- **Structured authoring tools**: Real structure starts taking shape in systems designed to capture content into a defined schema of some kind—or at least allow the creation of schemas on the fly. This kind of authoring happens in tools either separate from, or integrated with, a component content management system (CCMS) and often incorporates DITA, XML, or other structural standards. Although topic-based, structured authoring is a good fit for task-oriented documentation with reusable content. We are finding a need to define content and metadata, including linked data associations, at a more molecular level in order to optimize content for machine consumption.
- **Intelligent content authoring environments**: Authors work with content at a granular level, interacting with semantic services applications to enrich content in ways that will drive automated behavior downstream. These environments conceal—or reveal—the markup details, as necessary, and they provide authors with interactive preview and testing services so that the utility of the content components and semantic metadata can be confirmed while the author is working.

In an "Information 4.0" context, these next-generation intelligent content systems build on the emergent systems seen within the most recent wave of technology innovations. An example would be AI services that seek to understand consumer context, even sentiment, by analyzing a combination of user behavior, content engagement, queries, and content contribution. Next-generation search engines, websites, and conversational interactions will increasingly leverage data about what content a user interacts with and user actions resulting from those interactions.

Accelerating Consumer Expectations

Starting with the iPhone in 2007, mobile devices accelerated portable consumption, and most of us have had to remap our customer journeys to accommodate this dynamic. Whether outputting to Web or mobile, we mastered the concept of "every page is page one." Knowing that consumers now determine where their journey starts, the next step is clear: *on-demand, contextual personalization.* The movement toward personalization is an inevitable, natural evolution from the book, to the website, to the independent page, to the decoupled fragment, or molecule, of content. Each fragment can be discovered, through machines, separately from the page. With structure and semantics underlying content systems, every content fragment can ultimately live its own, independent life. Answers can be discovered separately from the pages the authors wrote them to live upon. Google already provides such "rich snippets" millions of times per hour.

So, can our content keep up? We need structured, adaptive content sets to meet the needs of ever-accelerating customer journeys that now traverse multiple devices and states.

Consumer expectations grow daily. We have come to expect instant access to highly personalized content. Conversational interfaces facilitated by Google and Amazon train consumers on a daily basis to become

increasingly dependent on real-time delivery of relevant, useful information in smaller and smaller chunks. Google parses structured data into rich snippets within search results, extracting information from our websites and answering customer questions as quickly as possible and with as little friction as possible. All of this requires intelligent content capable of interacting with machine consumption and automated distribution.

Addressing the "Non-Human" Environment

A "perfect storm" has resulted from the confluence of artificial intelligence (AI), machine learning (ML), natural language processing (NLP), and the dramatically improved platforms for Big Data, including customer data platforms (CDPs). These massive innovation drivers have created a seemingly insatiable demand for "machine-consumable" content to pair with the awe-inspiring zettabytes of human data. And so far, only a small minority of publishers have changed their internal systems to serve contextually rich, structured content ready for machine processing. A massive opportunity lies within the gap between *need* and *implementation* for organizations attuned to this rapidly shifting landscape.

Fortunately, most of the same methods and workflows we use to access a growing matrix of human consumers and channels have a direct parallel to methods we require in order to optimize content for machine consumption.

Audience Segments and Personas for Machines

Our content strategies and content models must expand to accommodate machine consumption, as well as various human consumers. We need to identify the types of machines that will consume our content. Various machine consumers include:

- Search engine bots
- Content aggregators
- Screen readers and other tools for accessibility
- Indexers and Web crawlers
- Chatbots and intelligent assistants
- Social media syndicators
- Personalization algorithms
- Automated marketing systems
- Sharing and amplification tools
- Regulatory compliance checkers
- Semantic Web applications
- Artificial intelligence (AI) services
- DITA Open Toolkit (DITA/OT)
- Other content, knowledge management, and marketing technologies

Content team members need to segment and define what kind of content each machine consumer is looking for, asking questions, such as:

- Does it consume structured data? In what forms?
- Does it need *schema.org* markup to generate rich search results?
- Does it need to understand context or purpose through metadata?
- Do the content management systems (CMSs) need to process it in a specific way?
- Does it need to interpret images, or understand them through explicit text?

Benefits of Machine Delivery

Machine consumption also extends to some enabling tools or technologies that may not immediately come to mind. Screen readers, for example, require text that can be served as audio for accessibility. This issue will grow in importance along with an aging population.

Content optimized for machine consumption has far more value for human consumers.

- It is more "findable," therefore more useful to humans.
- It can be targeted to specific human contexts and conditions, therefore reducing cognitive load on mentally overloaded humans.
- It can be used with AI and ML to automate more tasks, making life easier for humans.
- It can be used to reduce the burden on humans for repetitive, top-of-funnel sales, support, or help demands.

Our Roles Will Change and Expand

Publishing to machines involves collaboration within a much larger content operating model. This collaboration involves major innovations in the content supply chain.

- Our content disciplines and practices must expand into machine, as well as human consumption.
- Content strategists must help define which machine segments need to be addressed.
- Content engineers must determine the shape and structure needed in the content to conform to those machine consumption channels.
- We need updated content technology and integration architectures.
- We need shared orchestration models for structure and semantics.

Fundamentally, everything needs to change from the ground up. We can, however, make those changes in *small* parts. For now, the call-to-action for technical communicators is to continue increasing awareness around the issues described here and to start learning relevant skills that will facilitate this new era emerging across authoring and publishing.

CRUCE SAUNDERS (editorial@simplea.com) *is the founder of [A], the Content Intelligence Service. In partnership with leading global enterprises, [A] orchestrates content intelligence systems that unify the people, processes, and technology for omnichannel publishing and real-time, personalized customer experiences at scale. Publishers face many challenges creating a new operating model and orchestration approach for dynamic omnichannel content.*

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"Conversationalizing" User Assistance

By MARIANNE MACGREGOR

WHEN THE COMPUTER SCIENTIST Tim Berners-Lee invented the World Wide Web almost 30 years ago and Apple launched the AppStore for the iPhone in 2008, no one could have predicted that there would be millions of apps today. But here we are, and Industry 4.0 and Information 4.0 are upon us.

Conversational AI (CAI) has become a key component for this digital transformation. Conversation is our new user interface, taking over from websites and apps. We no longer need to spend time learning how to use technology or be overwhelmed by it. CAI allows us to talk with machines in our *own* language—and the technology is becoming natural.

CAI technology uses machine learning and natural language processing (NLP) to interpret text, voice, and images to find the right answer to a user's request. It does that based on patterns within the content we provide, processing the semantics of this content to identify the user intent. Through interaction with users, the technology learns by itself, becoming more intelligent and improving its responses as time goes by.

Gartner has predicted that 85 percent of all client-company interactions will be handled by chatbots by 2020, and that we'll be chatting with machines more than with our own partners (Press 2017). As this interaction becomes more natural in our everyday lives, people will expect a similar experience at work, and this will change how we provide user assistance (UA) content. By making UA content available through CAI technology, we can give our users a friendlier environment where they get immediate answers that help them get their jobs done more quickly and easily.

In 2018, we set up a project at SAP User Assistance to find out just what we need to do to get our colleagues up to speed on CAI. We are using a three pillar approach:

1. Involve our UA community.
2. Enable our colleagues with the necessary skills.
3. Equip them with the right tools.

Figure 1. Involve, Enable, Equip UA.

Involving User Assistance

Over the years, we've learned that including everyone involved in a change from the start is the right way to go—it helps us cope with the new, increases acceptance and trust, and makes everyone more open to different ways of doing things. We've covered a range of activities to promote awareness of CAI and our project—not just throughout our UA community, but throughout SAP as well.

Discovery Channel

We've created a "Discovery Channel"—it's mainly targeted at the UA community, but it's open to everyone in the company. There's a "Play and Learn" area, where people can discover and explore CAI and its characteristics at their own pace. They can interact with internal and external tools and read current articles from thought leaders. In a "Discuss and Share" area, they can tell us about their thoughts and concerns, ask questions, and share their knowledge and experiences. We've also incorporated a "Test and Tell" section, where we publish prototypes, proofs of concept, draft guidelines, and best practices, as well as a feedback request, allowing us to provide the best possible materials that are tailored to the needs of UA. We also run polls to find out what our colleagues are concerned about, what they want to know more about, and what particularly excites them. There's also a section covering our project, so they can get up-to-date information on everything we're doing.

The Discovery Channel goes a long way to raise awareness, acceptance, and visibility, but it's not enough by itself. In one poll we conducted, we discovered that many respondents had bad experiences in the past with simple chatbots, so we wanted to give our colleagues something that would really make them aware of the benefits of intelligent virtual assistants (IVA). This would also help them see how CAI technology can really help our users.

SAP UA Video Assistant

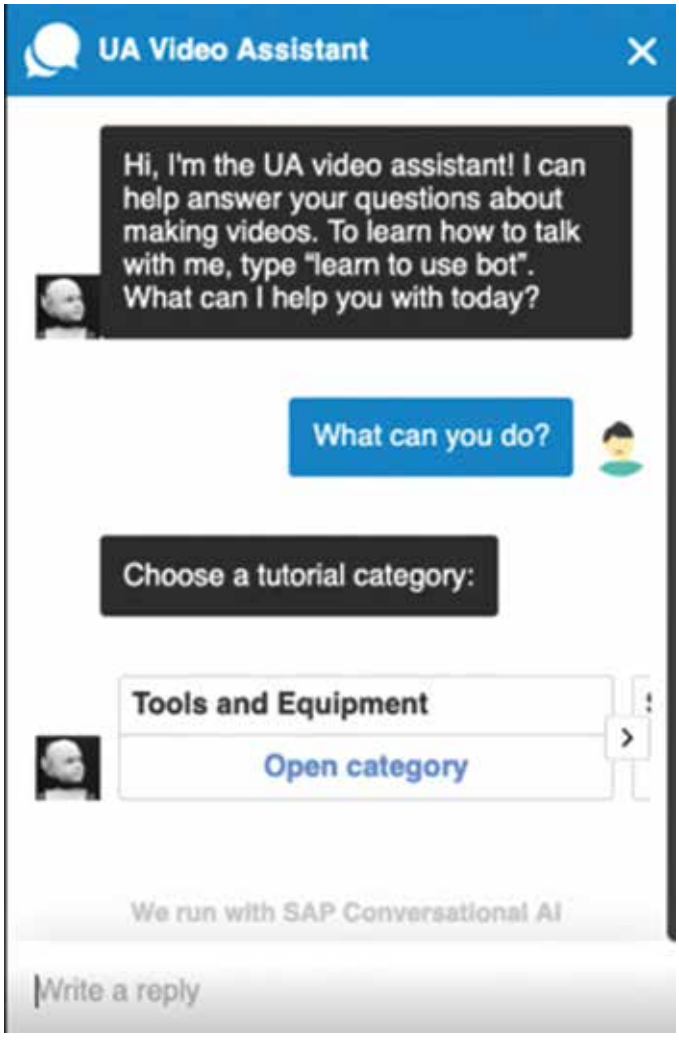
UA Video Assistant
Hi, I'm the UA video assistant! I can help answer your questions about making videos. To learn how to talk with me, type "learn to use bot". What can I help you with today?
What can you do?
Choose a tutorial category:
Tools and Equipment
Open category
We run with SAP Conversational AI
Write a reply

Figure 2. The SAP UA Video Assistant.

We built an IVA on SAP Conversational AI—the SAP product to design chatbots—for our UA community. This IVA helps colleagues create videos by providing information on scriptwriting, voice recording, screen recording, video editing, and publishing. It answers questions, but even better, it actually *does* things for our colleagues, such as automatically creating an embed link for a video that can be added to content or websites, making their jobs quicker and easier.

By giving colleagues their own IVA, we've helped them understand the benefits of a digital assistant through first-hand experience. They also see that the more the IVA is used, the more it learns and improves. All of this has taught us more about how users interact with a virtual assistant. We've added these learnings to enablement materials and used them to improve the IVA.

Team Sessions and Events

Once we had the Discovery Channel and the SAP Video Assistant up and running, we started to spread the word about our project through internal roadshows and events.

We've given dedicated team sessions, and we've been present at numerous in-house events to spread the word, answer questions, and provide support. We receive three to four CAI support requests per week, not just from the UA community, but from development teams as well, and this makes our UA organization visible at SAP and helps the project team to learn and grow, as well.

Enabling User Assistance

In the past, key qualifications of the UA job profile were to be able to write well and concisely. Recently we've added skills like multimedia, but CAI requires more. We also need to understand taxonomy, conversational flow, cooperative principles, AI, natural language processing (NLP), machine learning, technology, and more.

Training on CAI Technology

Arthur C. Clarke wrote, "Any sufficiently advanced technology is indistinguishable from magic" (Clarke 1977). It may *seem* like magic, but to get CAI right, we really need to understand how it works.

Technology training teaches our colleagues how to use our tool to design IVAs. They learn how the technology uses dialogue and reuses their content, and what they need to do to train the machine. They also learn about using logs and analytics to monitor how our users are using and experiencing the IVAs. Monitoring the IVAs we design allows us and our development teams to improve the product, because it helps discover potential misunderstandings and content gaps, not to mention what may need to be improved with the product itself. This provides massive benefits and allows us to tailor the interactions to the real needs of our users.

Training on Basic Concepts

At the same time, colleagues are trained on the basic concepts of AI, NLP, and machine learning, and how they impact the SAP strategy. Colleagues also learn how information is processed and delivered, and how to design and write information snippets in context.

Training on Dialogue

Lastly, our colleagues learn how to design effective dialogue flows. This includes the many language variations for saying

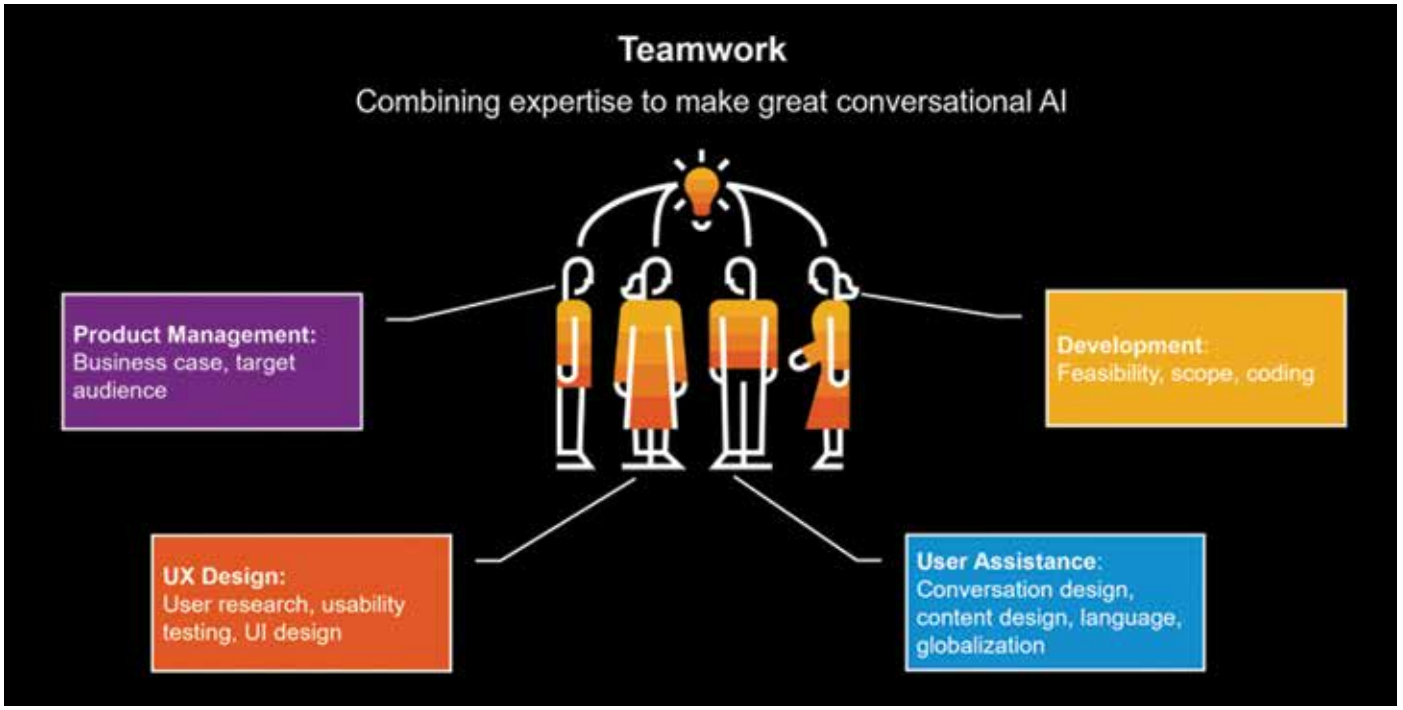

Figure 3. Teamwork – combining expertise to make great conversational AI.

essentially the same thing, how to convey an appropriate amount of empathy, and how to keep unconscious bias in check. They also learn about the psychology of machine interaction and the importance of gaining user trust and acceptance. Digital ethics and personality framework are also on the agenda. SAP Design has created a personality framework aligned with our brand to ensure that our IVAs speak with one voice. The framework is broad enough to allow us to tailor the personality to different products and users while staying on brand.

We also cover how to structure our content for machines, from page titles and sub-headers to paragraphs and chunking. Everything needs to be natural, conversational, and descriptive.

UA experts cannot afford to make mistakes with IVA conversations. Most CAI fails because the conversational flow hasn't been designed with care and doesn't consider different contexts, people, and topics. To create a trusting, respectful relationship with users, we need training and practice within the team—all collaborating to bring the best possible experience to our users.

As with any product, many different roles are involved across the CAI design process. UA needs to work especially closely with developers and designers to provide the best possible CAI. The team can create and test the dialogue, and then participate in quality reviews to ensure the dialogue is natural and clear.

Although the main target group for our training is UA, it's available for all roles at SAP. This way we ensure that everyone has the relevant skills and understands the skills that others on their team have.

Equipping User Assistance

By now, everyone's on board and gaining the right skills, but they also need the right tools.

Talking with One Voice

We have a large UA community and well over 200 products. All of them need to comply with the SAP brand. Best practices and guidelines ensure we all talk with one voice. They cover our personality framework, digital ethics, security, conversational dialogue, content optimization, and tips for using the tools. We also have a template toolkit to help with dialogue design.

Reusing Content

Effective content reuse requires the right technological implementation. At SAP we have millions of pieces of information, and we need to make sure the right snippet of information appears in the right situation. Getting the taxonomy and metadata right is imperative. A simple digital assistant can be deployed relatively quickly, but the effort required to create taxonomy and metadata for reuse is time-intensive and demanding. A taxonomy and metadata framework helps us to organize content clearly and enhances its findability. To ensure consistency of the SAP taxonomy, we have a taxonomy board comprised of stakeholders from across the company.

Within the project, we're also building various prototypes to ensure we have the best possible solution for our global organization. We have a lot of content, much in over 40 languages—it's a goldmine for CAI. Once we have the basic taxonomy and metadata framework in place, we'll use machine learning to tag the content for us, based on product-specific training data.

Open-Door Policy

We have a support system in place across the globe and any team can contact us for CAI support—whether it's about using the tools, creating the dialogue, or optimizing and tagging content. We also provide training on request.

Conclusion

It's a whole new ball game for user assistance
We're entering an age of machines – conversational AI is here
And we need to make it part of our team

Figure 4. CAI is part of the team.

CAI is here, and it's here to stay—it's part of our private lives and is becoming part of our working lives too.

For our users, the future of interacting with SAP products and our brand will be through conversation. It's a whole new ballgame for content, and one that brings us into direct contact with our users—exactly where we should be.

For UA experts, CAI is an integral part of our present and future as a technical communication industry, and we all need to embrace it. Let's do this!

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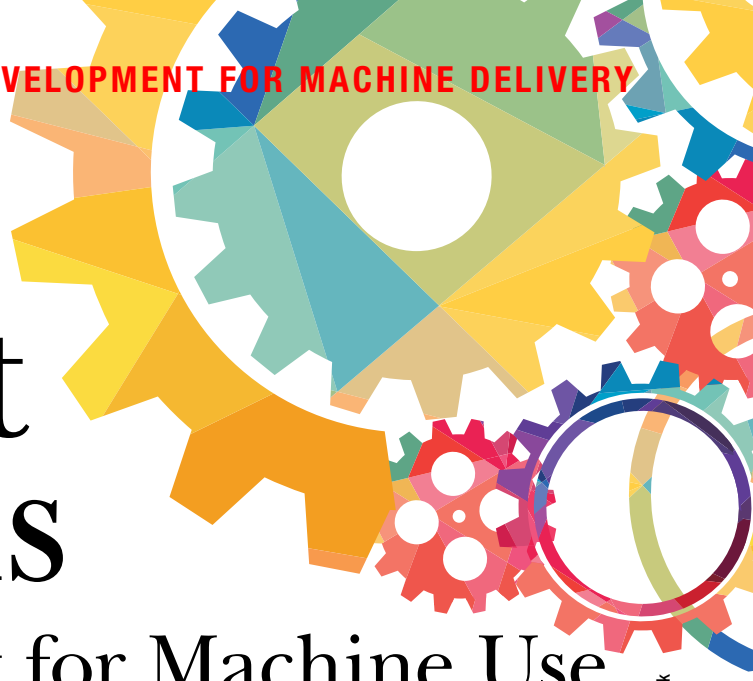
The Role of Content Operations in Delivering Content for Machine Use



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By RAHEL ANNE BAILIE | *STC Fellow*

DEVELOPING CONTENT is one of the oldest practices in the world, but in some ways, it has the most immature operational model. Look at the contrast with practices that overlap with content.

DevOps. A software engineering methodology that unifies software development (Dev) with information technology operations (Ops) with the goal of shortening systems development lifecycles while delivering features, fixes, and updates frequently in close alignment with business objectives. The main characteristic of the DevOps movement is to strongly advocate automation and monitoring at all steps of software construction, from integration, testing, and releasing to deployment and infrastructure management.

DesignOps. Everything that supports high-quality crafts, methods, and processes. Operations are the elements that facilitate high-quality instances of those activities with minimal friction. Operations includes the tools and infrastructure required to complete the activity.

ResearchOps. A discipline with primary goals to:

- Operationalize the customer research function to reduce inefficiencies and scale across projects via repeatable processes with reliable timelines, ready-to-apply methods, and templates.
- Make research more relatable and encourage cross-functional team participation in understanding customers.
- Make research insights more accessible for everyone in the company to easily find, collaborate, and integrate the findings in their work.

Even newer fields of practice, such as artificial intelligence (AI), have operational models, as described by Splunk, a provider of AI services.

Goals and Benefits of Operational Models

Sifting through these descriptions gives us some common goals for operational models. DesignOps is about minimizing friction while working through design processes. ResearchOps is about reducing inefficiencies and scaling up with repeatable processes and reliable timelines. DevOps and AIOps are about automation and monitoring. No matter which operational models we look at, we can summarize them as *systems for delivering with efficiency*.

Some operational benefits are expressed explicitly:

- Reducing inefficiencies
- Developing repeatable processes
- Automating whenever possible
- Scaling up output
- Monitoring results

The business benefits tend to be more implicit, and those content developers plugged into management are more likely to articulate those benefits:

- Improving collaboration across value streams
- Automating continuous delivery pipelines
- Improving innovation
- Reducing risk
- Creating business insights

An Operational Model for Content

The idea of an operational model for content is not new (looking back through my old articles and presentations, I was using the term Content Operations well over a decade ago). But the term didn't really register until people had a common mental model. Similar to the operational models of other fields, content operations is focused on efficient production of content while maintaining quality. There is a parallel operational model for documentation: DocOps. However, the focus on documents doesn't resonate with a large portion of the industry that doesn't produce documents, per se. ContentOps aims to bridge those silos. More on that later.

In a ContentOps Slack group, the following working definition was adopted:

> ContentOps is a set of principles that results in methodologies intended to optimise production of content, and allow organiations to scale their operations, while ensuring high quality at delivery time, to allow for the leveraging of content as business assets to meet intended goals.

Content operations are the logical outcome of a content strategy—create a content strategy, followed by its implementation, with the goal of creating an operational model that helps an organization meet its goals. The operational model that comes out of a particular strategy will be as unique as the strategy itself. For one company, it might be about auto-generating documentation that describes code. For another, it could be about systematizing the collection of standardized content from a global network of contributors. Content operations could be about delivering personalized content for a range of audiences, or about delivering content fragments for retrieval by bots and voice assistants.

The Spectrum of Delivering Content for Machine Use

How content is prepared for machine use ranges from extremely brittle to extremely flexible. At the most brittle end of the spectrum, content is baked into the code, app, or voice assistance software. Updating the content is clumsy and labor-intensive. All the relevant locations of the content need to be found. The updated content needs to be supplied to the developers, who overwrite the existing content. The content needs to be checked, to ensure that the content is accurate, and the right content was pasted into the right location.

At the most flexible end of the spectrum, the content is produced to CODA (create once, deliver anywhere) standards, stored in a repository, with semantic structure and metadata applied, and written for every state programmed by the developers. Pulling the content by the consuming system is automated using programmed logic. There is a definitive source of truth for each content object. There is an active governance model in place, and workflow is automated and registers each review and approval based on that governance model.

The bulk of organizations lie somewhere between these two extremes. They are blissfully unaware of content operations, and so do their best using cobbled-together processes. They might create content in a word processing program such as Microsoft Word or Google Docs, email documents around for review and approval, record workflow stages in a spreadsheet, and then send the final content to someone with the job of getting the content into the CMS, app, bot, or voice assistant software. While these are processes of sorts, they are not agile enough to be able to respond quickly or to scale along with business needs.

The Imperative for Adopting Content Operations

Sometimes the best way to explain the implications of adopting a system in one industry is to use an example from another industry. Let's look at one of the early operational models that benefited from a proper system: financial operations.

Before the 1980s, accounting was done using double-entry bookkeeping. Each transaction had to be entered twice: once in the debit column and once in the credit column. When these two entries are not equal, a third entry, for the difference, needs to be made in the equity column. This is a labor-intensive process, prone to error. Getting a clear financial analysis was dependent on completeness of entries, data accuracy, and the manual transfer of financial data and creation of formulas. In the 1980s, a spreadsheet-based system automated some of the process, and we've now progressed to extremely sophisticated accounting software in which data is entered once, and is used in multiple calculations, shown in the form of dashboards, to get instant pictures of financial health across an organization.

Can you imagine the reaction today if you went into a large corporation and found a raft of data entry clerks using spreadsheets and copying the data into the accounting system only when shareholders want to have a look at the financial status of the company?

As far as content systems go, for the most part, organizations operate in the equivalent of a pre-1980s model. Content is locked into mini-silos (called documents) instead of a central repository. The re-use is tracked in spreadsheets, which is the equivalent of using people as slow computers. The multiple versions—either attached copies to email or created by copy-and-paste—break the audit trail. It's all terribly manual, prone to human error, and not scaleable.

Organizations are generally aware of how much content costs to produce. It is relatively straightforward to calculate the cost of writing, reviewing, editing, and approving a piece of content. Management generally concedes that content is not an inexpensive venture. Once content is created, delivering it is not expensive. Whether delivering through a Web CMS, a chatbot, a voice bot, or a mobile app, these systems provide content to users in multiple configurations, over and over again, with little overhead.

Increasing Content Efficiency While Reducing Content Debt

The cost of maintaining content, however, is exponential. Consider this: whatever processes are used while creating the content are also used for updating and maintaining that content. But before that, there are pre-steps to identify the content that needs updating, locate it across various systems, and record any changes. Synchronizing these changes across systems and platforms can be both costly, time-intensive, and prone to error.

The systems created to handle content operations, however, are generally seen as complicated and unwieldly.

They were historically created by software developers who have a limited knowledge of how writers create content. There are assumptions about the mental models of authors. There is a lack of understanding of the complexity of processing content. And there is a fallacy that managing content is the same as managing data—a shocking lack of awareness of the impact of factors such as grammar, context, and nuance. There is also a lack of understanding about the limitations of technology and the need for a technology stack for content.

The lost opportunity cost can be staggering. After all, content is the payload that these systems are designed to deliver. The cost of maintaining the status quo—the cost of doing nothing—accumulates ever-increasing content debt.

Content debt manifests itself in many ways. One way is delivering subpar content. At the very least, it can cause an increase in support calls from confused users. In a worst-case scenario, it can result in a lawsuit when users suffer consequences from inaccurate information. Content debt also manifests itself in a lack of scalability. The number of people, departments, and agencies that get added to a project during surges in content production can be astounding. One recent example is a team of five content developers that swelled to 30, at a seven figure cost over six months, to cover urgent content updates.

What Might Content Operations Look Like

A strategy for content operations is not an off-the-shelf product. There are, however, a set of common principles that can be turned into a unique prescription for an organisation. There are several basic building blocks that, together, make for a powerful set of tools to boost productivity while maintaining content quality, and allow operations to scale, both to new channels and in volume.

The foundational building block is a dedicated authoring system. This is where authors enter and manage content. The type of system will vary, depending on the business needs and user journeys, and the level of sophistication needed to deliver the content. The important aspects of the authoring system are that it separates content from format and creates a definitive source, or "single source of truth," for each piece of content. Through workflow, the authoring system should be able to automate all of the administrivia of recording the author who created each piece of content; who edited, reviewed, and approved it; and at what times and on which dates. The system should also have a way of exporting the content for presentation to multiple outputs, such as a web CMS, to downstream systems, or even to PDFs to be printed.

The next building block is a semantic technology tool. For the authoring tool to tag content in a way that downstream systems can ingest and deliver it—keeping in mind aspects such as personalization and multiple states—there must be a central place to manage metadata and its relationships. The more ambitious the plan for customer experience, the more sophisticated the need is for a robust set of semantic tools to manage the metadata ecosystem.

Another potential building block is a content optimization tool. This tool supports authors to maintain content quality efficiently and effectively by giving them a set of authoring support tools along with an analytics dashboard to visualize the quality and areas of improvement needed across the content corpus.

Underpinning all of this is a strong governance model. To produce content efficiently, a certain level of consistency and reliability must permeate the entire system. The systems that allow corporations to manage financials or product inventory work, because there is strict control, and everyone is expected to adhere to the system—sometimes by legal regulation and sometimes by good business practice. When it matters, the corporation invests in controls. Similarly, controls on content production should be strictly reliable and traceable.

There are other building blocks that are specific to different business environments, but that is another article.

Stepping Up Your ContentOps Game

To quote Albert Einstein: "We cannot solve problems by using the same kind of thinking we used when we created them." A technology stack that consists of word processing software, spreadsheets, email, and sticky notes on hard-copy documents is not efficient—and it's certainly not compliant with the definition of ContentOps.

Delivering content for machine use means applying new ways of thinking and new ways of operating. Content operations is not prescriptive, but a set of principles that emanate from a strong content strategy. With the increasing number and variety of content outputs that must be automatically created for use by machine, the imperative for ContentOps is stronger than ever.

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Making Chatbots Really Helpful and Smart

with Ontologies, User Context, and Structured Content

By ALEX MASYCHEFF

RECENT SURVEYS and predictions from industry experts show that the vast majority of companies are planning to adopt chatbots before 2020. A big question is what these chatbots will be capable of doing and what additional value they will provide for the user. We've already seen chatbots that perform simple tasks, such as ordering pizza, booking an airplane flight, giving a weather forecast, and even providing basic customer support. But how well can chatbots understand users' needs and offer precise and useful advice tailored to a specific user's situation?

A Conversation with a Customer Support Chatbot

Imagine a company that makes printers. Let's assume the following.

- There are three models of the printer: EasyPrint Basic, EasyPrint Pro, and EasyPrint All-In-One.
- EasyPrint Basic and EasyPrint Pro are inkjet printers. EasyPrint All-In-One is a laser printer.
- EasyPrint Basic is connected to the computer via a cable. EasyPrint Pro and EasyPrint All-In-One are capable of both cable and Wi-Fi connectivity.
- For the sake of simplicity, let's say that only three issues may occur: the printer doesn't print, there's a paper jam, or the print is too light.
- If the printer doesn't print, it might be related to connectivity problems (for example, the cable is not plugged in or the Wi-Fi connection is lost).
- If the print is light, the cartridge or toner (depending on the printer model) may need to be replaced.
- If there's a paper jam, the troubleshooting procedure will be slightly different for each model; to retrieve the jammed paper from the printer, the panel you need to open will be different for each of the models.

I've built a simple troubleshooting chatbot for this scenario using a free chatbot platform and deployed it in Facebook Messenger. Here's how a dialog with the chatbot goes:

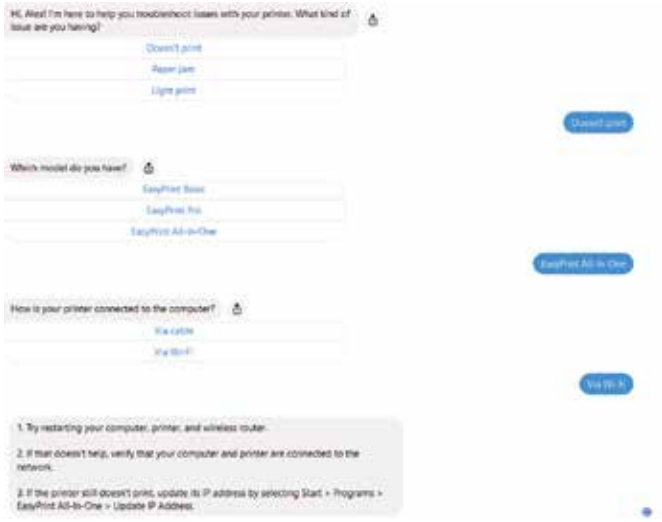

Figure 1. A printer chatbot conversation.

Is It Really Smart and Scalable?

This chatbot seems to be helpful. But how helpful will it be if the product and user's request become more complicated? Keep in mind that in this example, we are dealing with only three product models, and there are only a few variations in the troubleshooting procedure.

While the approach shown above is easy and relatively cheap to implement, it can only cover simple scenarios. In real life, the number of variations will be far greater, which means several things:

- Content varies depending on multiple parameters, such as product model, release, audience, or market, and these parameters can come in all kinds of variations. The complexity of button-driven navigation, like in the example above, will grow.
- With multiple parameters, button-driven navigation might be confusing, because users won't necessarily understand under which category the issue falls.
- Button-driven navigation represents a simple linear flow that shows only one perspective. As in the example above, it allows the user to determine what to do if EasyPrint All-In-One with Wi-Fi connectivity doesn't print, but it doesn't let you perform a reverse operation—to ask what kind of problems the Wi-Fi connectivity may cause. More precisely, the approach above would require designing a separate flow for each perspective.
- It's great when a chatbot answers the specific question the user asked. However, a challenge of the information age is that we don't know what we don't know. The user doesn't necessarily know which questions to ask to achieve a specific goal. Therefore, if the user didn't explicitly ask a question, the chatbot won't give an answer, while that information could be important and helpful for the user.

At some point, you'll need to allow the user to type free (and thus, unpredictable) text. The question is: how can a chatbot retrieve the user's goal, also known as the user's intent, from that question and map it to a piece of content that precisely addresses the issue?

There are a couple of major approaches:

- You can try to recognize the user's intent by analyzing keywords that appear in the user's request.
- You can pre-define utterances for each user intent, and then try to find a match between what the user typed and one of these utterances.

Analyzing Keywords

With keywords, you define a mapping between what the user types—specifically including a certain word or combination of words—and the answer that the chatbot should display as a result.

A problem with this approach is that one keyword might appear in different contexts. In other words, different answers should be given based on context. For example, if the user types, "I'm out of paper," the chatbot should probably provide instructions for how to order more paper. But if the user types, "My printer displays this message: 'Out of paper,'" the chatbot should probably provide instructions for how to load paper into the printer. Thus, keywords might work only for really simple scenarios.

Identifying Utterances

A more advanced approach for more complicated use cases is using utterances. An utterance is a way to express the user's intention. For example, if the user wants to replace a cartridge, there are many ways to ask about it. For example:

- How to replace a cartridge?
- How should I change an old cartridge to a new one?
- What's the procedure for replacing my cartridge?

A problem with utterances is that you have to define at least 15 utterances for every intent the user might have. Think about how many intents a user might have when working with a printer: print a document, set the print quality, connect the printer to a computer, align a cartridge, copy a document, print on the both sides of the paper, and so on.

Handling Incomplete Requests

To see how complicated the situation can get, add in multiple product models, and therefore increasing the number of content variations to be handled.

If this user asks, "How can I replace a cartridge," this request is incomplete. It doesn't provide sufficient information about the user's situation. In which model should the cartridge be replaced? Is it a black or a color cartridge?

The way this problem is traditionally solved is by using entities. You can think of an entity as a parameter of the intent. For example, in the question about replacing a cartridge, at least two parameters must be provided: the printer model and whether it's a black or color cartridge.

If any of these parameters is missing in the user's request, the chatbot needs to request this information from the user by asking a question. In the image below, one entity which represents the cartridge color is provided, but the second entity representing the model is empty.

Figure 2. A missing entity in a user's question.

One problem with defining entities is the same as defining utterances: you have to specify intents, utterances for each intent, and then manually label entities in each utterance. It's a bit easier with machine learning, because with a sufficient amount of utterances, an entity-extraction engine can learn to automatically recognize entities. After manually labeling the entity in a number of utterances, this

entity will be automatically recognized in other utterances. A lot of manual work has to be done, however, to train the entity extraction engine. To address these challenges, we can use a combination of three components: ontology, user context, and structured content.

Ontology

Ontology is a structural representation of knowledge about a domain. An ontology consists of concepts in and about the domain and relationships between those concepts. Ontologies are stored in a machine-readable format, so they can be processed by intelligent applications, such as chatbots.

This is how an ontology for our printer domain can be constructed:

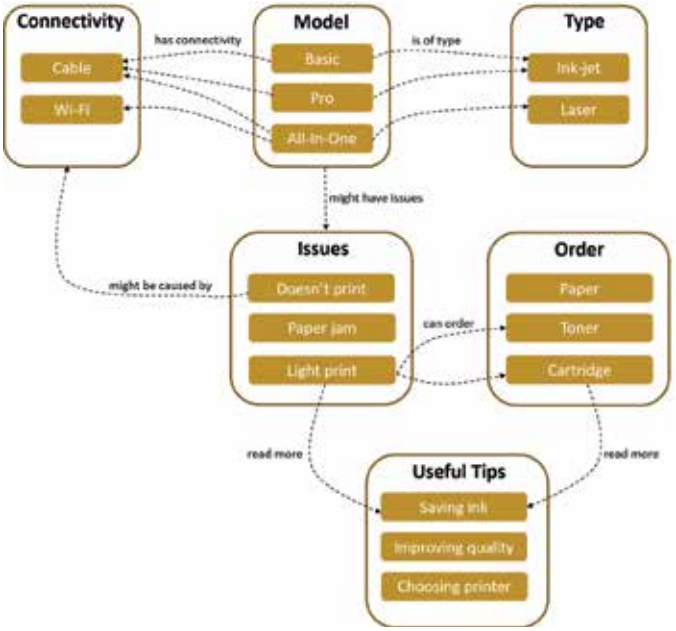

Figure 3. An ontology for the printer domain.

The ontology defines the types, model, and connectivity options, as well as possible issues that might occur. It also shows how each of these options relate to each other.

You can think of ontology as a *knowledge map*. In the same way that GPS navigation needs a geographical map to guide you from point A to point B, a chatbot requires a map to guide the user to the goal. GPS navigation needs information about where you want to go, whether you want to avoid toll roads, whether you prefer safety over speed, whether you want to avoid certain areas, and so on, and navigation through the knowledge map requires information about the user's needs, known as user context.

User Context

User context is the sum of all user circumstances at the current moment in time: goal, user's location, product, history of previous interactions, user's role, and language. The content that the user receives in response to a question is determined by the combination of all these and similar factors.

A user's context might come from many combinations of elements. For example, the user may have EasyPrint All-In-One connected to the computer via cable and experience problems with printing. Similarly, or the user may have EasyPrint Pro with jammed paper.

Structured Content

Because the user's context is granular, to match content to each specific user context, the content has to be granular as well. In addition, each content granule has to be labelled with information that corresponds to the situations to which it is applicable, such as product model, audience, and issues it covers. This is when structured content makes an entrance.

Structured content allows you to keep your content granular and to enrich it with semantic markup that contains information about the content. This semantic markup is readable by machines, and thus processes of retrieval and content assembly can be automated and become part of larger processes.

If we have an ontology *and* structured content, we can connect them with one another. This can be done in the ontology itself by providing ontology concepts with references to specific pieces of content. Alternatively, it can be done by adding to the content metadata that corresponds to the ontology concepts.

Navigation through Ontology

Let's say that the user asks, "How to get rid of a paper jam?" We still need natural language processing (NLP) to identify the user's intent. Once the user's intent is captured, a concept related to this intent will be identified in the ontology. In our example, it will be the concept that represents the paper jam issue.

By tracking the relationships for this issue, we see that it might occur in any of the three printer models. The user's request is incomplete, but we know what the chatbot has to ask based on the structure of the ontology.

Imagine the user responds to that question with "EasyPrint All-In-One." If there is no ambiguity or other relationships to be followed, we can identify a piece of content tagged with the corresponding metadata and display it to the user. Moreover, if the paper jam issue has a relationship with a concept representing useful advice, we can follow this relationship and display advice about how to avoid paper jams in the future. In this example, the chatbot generated questions automatically based on the structure of the ontology rather than on a manually built decision tree with multiple branches.

The ontology can also be used to provide the user with relevant information even if the user didn't explicitly request that information. Suppose that the print is too light. It might be an indication of low ink (if the user has Pro or Basic model) or low toner (if the user has an

All-In-One model), so it makes sense to offer the user information about ordering a new one. This can be done by defining in the ontology a relationship between the issue and the ordering information.

The ordering information, in turn, can be requested directly or in connection with other requests. Our ontology defines the relationship of the ordering information with other concepts in the domain. For example, if the user orders a new cartridge, some tips on saving ink can be provided.

Inferencing New Relationships

One more feature of ontologies is the ability to infer new information based on existing data.

Consider two statements:

- All humans are mortal.
- Socrates is a human.

What conclusion would you make out of these statements? "Socrates is mortal." This is new information, which wasn't defined explicitly. We discovered it by analyzing the existing data.

With ontologies, you can build rules on top of your ontology, and then let new information be automatically discovered.

Suppose we've defined the following rule: all laser printers in the EasyPrint family have Wi-Fi connectivity. Now you add a new concept to the ontology that defines a new model called All-In-One. You specify that the printer is a laser type and that it belongs to the EasyPrint family. Based on the rule we defined, it can be inferred that the All-In-One model has Wi-Fi connectivity.

There are many ways that inference can be used. It can help you reduce the amount of questions the chatbot asks the user. Some answers can be predicted based on the information already defined in the ontology or concluded from previous users' answers.

Inference also helps to provide the user with information that she didn't ask about explicitly but might be interested in.

The Value of Ontology

Now you might be thinking that defining intents, utterances, and entities requires a lot of manual work, but so do ontologies! Creating an ontology with semantic relationships and rules seems to require a lot of work, too. What's the difference?

Here are a few things to keep in mind.

Ontologies are not just for chatbots. Chatbot delivery is just one of many intelligent applications that can use an ontology. An ontology is a formal way to unify and standardize the knowledge that you have in an organization regardless of the format of the content.

Ontologies allow you to associate concepts defined in the ontology with relevant information resources, whether it's an article in an online knowledge base, a DITA topic, a Microsoft Word document, or a video. In other words, using an ontology, you can link a semantic model of the domain with the knowledge about the domain, regardless of the specific format in which the knowledge is stored, because when the ontology relationships between concepts are defined, the content associated with these concepts also becomes interconnected.

Therefore, an ontology can become a platform- and repository-independent knowledge model that connects department-level systems and repositories and provides navigation through the knowledge across the enterprise—*beyond* the boundaries of a specific department. The availability of machine-readable formats for describing ontologies (e.g, RDF XML, OWL, Semantic Web Rule Language) make them very suitable for this role, because various interfaces can be built for navigating through the ontology, including chatbots and customer portals. They can allow a content consumer to start from an instructional video created by the training department and get to best-practice advice through the web of semantic relationships defined in the ontology.

Because ontologies allow for machine processing, each team can use their own tools and business logic to process it.

In addition, the ability to automatically discover new relationships based on the existing information that is provided by ontology-related technologies allows you to find connections that might not, at first, be visible. With the constantly growing amount and complexity of information that teams and companies and users must deal with, this capability becomes critical.

Conclusion

If you want to provide your customers with accurate and precise information tailored to their specific needs, structured content should be an essential component of your solution. However, *structured content alone is not sufficient.*

That structured content needs to be powered by an ontology that represents a knowledge map. This map will allow you to dynamically construct individual pieces of structured content into an interconnected web of knowledge. And to navigate through the knowledge map, you must capture the user's context.

A combination of structured content, ontology, and user context will provide an information infrastructure that can help you guide the customer through the knowledge relevant to her needs.

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Writing Conversational Content: The DOs and DON'Ts

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By ONDREJ SIROCKA

AS A PRODUCT MANAGER of a content management system for omnichannel content delivery, I see growing traction among businesses that are interested in conversational interfaces (CIs) for communication with their customers. I'm a big fan of this technology, and I find it to be an exciting and innovative way to improve users' experiences. I also see, however, a common struggle among the companies trying to adopt it: it's completely new to them, and they're not entirely sure how to approach it from a technological and a content perspective. At Kentico Cloud, we have completed some projects like this, and in this article, I will share our experiences and some quick tips for dealing with this kind of challenge.

Don't Get Scared of the Technical Challenge

If you want to implement a conversational interface, don't let the technological challenge drive you away from the idea. Often I hear people say, "I don't think we will ever build it. It's too complicated. I don't understand it. It involves sci-fi technologies, like artificial intelligence, and only big companies can afford it."

The truth is that the technical part is usually not the most challenging. It's the user experience that's the real struggle. In fact, most conversational interfaces are not artificial intelligence at all. They are just programs following programmed behavior, and even the most advanced ones are only using machine learning and natural language understanding.

While that might also sound complicated, you don't need to deeply understand it, because there are great tools for building these programs, like Google Dialogflow, Microsoft LUIS, and IBM Watson, among others, that you can set up in a few minutes and learn a few simple concepts. It's easy to use them, and they'll do all the hard work for you.

Don't Do It Just Because It's Cool

Although the technological part is not the biggest issue, it still takes a lot of effort to build a conversational interface, and it can become quite complex and expensive. Therefore, don't build it just because "the cool kids are doing it." Unfortunately, we have seen that happen.

Instead, support your decision to implement a conversational interface with a relevant content strategy; based on that, determine whether a CI is the appropriate communication channel.

There are two major elements that might help you with the decision. First, analyze your typical customers or personas and determine what channels they use for work, communication, or even fun. Second, define what channels are aligned with your organizational and content goals. If a conversational interface appears on both lists, and it is a top priority, you might be good to go.

If you aren't able to justify conversational interface implementation with a clear and relevant strategy that is supported by the goals and needs of your personas and your business, then reconsider the idea of building one—it's likely not the right thing to do right now.

Plan Before Writing

Once you've determined that a conversational interface is the right direction for your business, you might be tempted to jump into the implementation phase and start delivering quickly.

Try to hold off and do some less sexy stuff first. Chatbots and voice systems are quite new, and the creative process for developing them has some aspects that are likely to be new to most of us. It's beneficial to plan out everything before we write the first line of code or content.

Thus, define a plan and strategy first—not the general content strategy I mentioned above, but a plan for the conversational interface itself.

Here's how we do it:

- Analyze customer behavior.
- Define goals and scope.
- Create a character.
- Design a flowchart.

Analyze Customer Behavior

You already know your customers, and you might have personas defined. It's a good idea to analyze their behavior and agree on the tasks, issues, or challenges that your new interface will address for them.

We've learned that the easiest way to do this is talking to customers directly, learning about their problems and objectives, and gathering feedback about their experience and suggestions for improvements.

In general, the benefit of the conversational interface for your users might be anything from faster searching for information to providing assistance for performing specific tasks more easily. It depends on their context, so do your best to find out what that context is.

Define Goals and Scope

Helping your customers and improving their satisfaction is always a priority, but you should also ask, "What's in it for us? What business goals do we want to achieve by implementing a conversational interface?"

After you complete the customer analysis, it's time to define your goals, and based on those, determine the scope of your solution. Every time someone on your team suggests a feature, conversational flow, or any other addition to the scope, they should justify how it is going to help you to fulfill the goals you have defined.

Clear goals help you maintain the direction of the implementation and keep it within clearly defined boundaries that reflect your objectives. Is your goal cutting costs for customer support, increasing conversion rates, supporting sales growth, or something else? Be sure to capture those goals.

Create a Character

Well-designed bots are, in fact, well-designed conversations, so next you need a conversational character. Your character will greatly influence your copy and style of writing, so it's important to have it defined *before* you start designing and writing the conversational content.

Generally, it's a good idea to project your strategy and your brand onto the chatbot persona—a chatbot for Disney will definitely have different language and behavior than a chatbot for an insurance company that is focused on corporate clients. If you have some marketing communication guidelines, brand materials, voice and tone, or language specifications, they can be a great help in defining the voice of your conversational interface.

Design your character. Define its backstory, avatar icon, voice and tone, language, and personality, then use your writing skills to make it come to life. If you don't feel confident with this step, don't be afraid to hire an expert. No matter how easy it might look, creating a conversational character is not a simple thing, and few people have real experience doing it.

Design a Flowchart

Now you have an understanding of your customers, your goals and scope, and your character. It's time to design your flowchart. A flowchart is simply a map of all your conversational scenarios and how they flow. It will help you to illustrate where the dialog can go and what content you need to produce.

This step is very important, because even a simple task, like ordering food, can have many unexpected "side scenarios," like upselling with a drink or another promo offer, setting up the delivery time for a specific hour, changing the number of items in the basket, and so on.

As for the tools, I prefer to use mind-mapping software, because it's easy to make changes in the flow. Paper and pencil will do the job, too.

To start, you need not write actual dialog in the bubbles. It's enough to include a description of what's happening at every step.

Do Your Writing Right

That's it for strategy and planning. Now let's take a look at some tips for starting the content production.

Note: I'll demonstrate tips on chatbots, as it's easier in a written article, but most of them are applicable to conversational interfaces in general.

Write Structured and Reusable Content

Because you're producing content for a new channel, it might seem appealing to create completely new content in a new platform just for the purpose of the conversational interface.

Rather, try to reuse what you already have, or at least try to prepare your new content in such a way that it will be reusable for other platforms, too. In other words, intelligent or adaptive content.

If you haven't heard about intelligent content, it's structured content that is produced so that it's easily reusable across multiple channels or platforms. For more detail about this, see "Prepare Your Content for the Future," cited in the Resources section at the end of the article.

Your content shouldn't be produced in silos, but rather the team should cooperate and collaborate to create and use the same content stored in one place. Following this advice will save you a lot of time and pain. Kentico Cloud, an omni-channel content hub designed exactly for this scenario, is one tool that you can use to store intelligent content.

Pick Scenarios One by One

When writing the conversational content, focus on one conversational flow at a time. Don't think too much about what can happen in other scenarios. Even though your chatbot has multiple scenarios, your customers are always going to experience just one of them at a time.

Start with the scenarios where you see the biggest value for you and your customer, do a test run, and then continue with the rest, step by step.

Ensure People Know That They're Talking to a Bot

Ensure people know that they are talking to a machine, because they don't like to feel like they are being fooled. No matter how well you implement your chatbot, there will always be situations when the conversational interface won't be able to respond correctly or won't get the user intent just right.

I once tested a Mayo Clinic skill on Alexa and asked, "How can I go on a diet?"

Alexa answered, "Suicide, taking your own life, is a tragic reaction to stressful life situations—and suicide can be prevented...."

It had understood that I wanted to *die*, not go on a *diet*. It was kind of funny, because I knew that I was talking to a machine, but if I had thought I was talking to a real person, I wouldn't have felt good about the response I got.

So make sure people always know that they are talking to a bot, and apply this rule to your writing and to the process of creating the character, as discussed earlier.

Always Have a Way Out

Closely related to the previous tip: always have a way out.

It might happen that your bot won't be able to help, or there might be customers who are not willing to talk to a machine. For that kind of situation, make it possible to redirect the conversation to a real person at any point in the dialog.

Repeat Users' Input

When compared to classic visual interfaces, conversational interfaces provide us with less control overall. Think about it—when you are using a mobile application or the Web, you can click or tap, instantly see the information you're looking for, skip certain parts to get to what you want, and so on.

A chatbot or voice channel is essentially one-directional, has a specific flow, and can provide a limited amount of information at a time. So how do you ensure that your users have the feeling they are in control and know what's happening? By repeating the user's input wherever it makes sense. Users need to be sure that your conversational interface got their intent right. Therefore, some kind of confirmation is important.

Provide Summaries

For the same reason as repeating user input, provide your users with summaries (see Figure 1). Ensure your customers can review the current situation or the actions they've taken so far.

Figure 1. A chatbot providing a summary to a user.

Remember the differences between visual and conversational interfaces when designing and writing your content, and make sure that you give your users as much control as possible.

Use Close-Ended Questions When Possible

When you can, use closed questions with predefined answers (see Figure 2).

If we didn't provide the user with options, she would likely be lost, because she wouldn't know what upgrades are available. If the list of next possible steps is short, give your customer a close-ended question with clearly defined answers.

Figure 2. A chatbot providing several closed-ended questions to a user.

Provide High-Priority Information Right Away

As I mentioned, conversational interfaces are quite different in terms of providing information compared to computer screens. For Alexa, it takes some time to communicate content. For chatbots, you have limited possibilities for presenting the information. Thus, it's important to prioritize your content, and provide the most important piece of information right away. Compare the conversation in Figure 3 to the one in Figure 2.

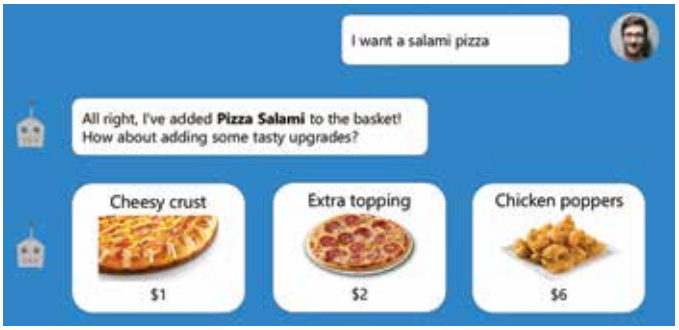


Figure 3. A chatbot providing high-priority information to a user.

The difference is that the most important information (name, photo, and price) is now instantly visible, and the user doesn't have to ask for them specifically. This helps the user to save time and make the right choice.

The only thing missing in Figure 3 is specific actions the user can perform. Figure 4 adds another level of usability to the conversation. Now the user has all the information they need, and the actions are clearly defined.

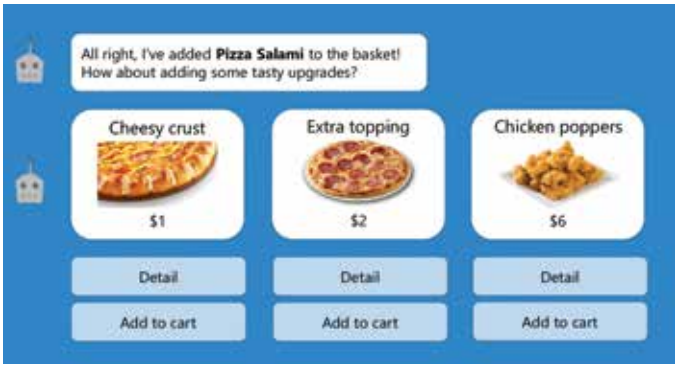


Figure 4. A chatbot providing priority information with more usability.

Prepare Multiple Versions of the Same Thing

Next tip: randomize conversational answers. You'll likely identify some parts of your conversational flow that will be repeated more often than other parts. That's typical for confirmations, asking for additional information, or situations when your bot doesn't understand what the user has said or asked.

Thus, it's a good idea for those parts of the conversation to prepare multiple options and randomly exchange between them. In Figure 5, I have prepared various versions of the chatbot saying that it doesn't understand what user wants to do.

I'm sorry, I didn't quite get that.
I'm afraid I don't understand.
Sorry, can you rephrase that?
When I grow up, I'll be able to do that for you. Right now, I'm not sure I understand.
Uh, oh... what do you mean exactly?

Figure 5. Prepare multiple versions of the same response.

Humanize Your Conversational Interface

And last but not least, humanize your conversational interface. Although I told you to let everyone know that they are speaking to a bot, the conversational flow should feel natural and human. Consider all of the little things we inject into conversation, like "Uhm…ok, just a sec" or "This might take a while. Hold on!" or "Good choice, that's my favorite, too!" These phrases can help you to make the conversation sound more natural. It helps you to build conversational personality, keep the interaction friendlier, and build a connection with your customer.

If a conversational interface is the right content-delivery mechanism for your business and your customers, great! And if you follow these tips, you should have a successful, strategic conversational interface up and running in no time!

ONDREJ SIROCKA (ondrej.sirocka@kentico.com) *entered content business seven years ago when he started leading content-heavy projects for a Web development agency. He quickly realized there are a number of issues and obstacles not being addressed in the market of content management and delivery. Therefore he decided to change it, and today he is a product manager at Kentico Cloud. His goal is to turn omnichannel content delivery into a seamless and transparent process.*

RESOURCES

Sirocka, Ondrej. "Prepare Your Content for the Future." *Kentico Cloud.* 7 February 2018. *https://kenticocloud.com/blog/prepare-your-content-for-the-future.*

President's Address from the 2019 Summit

I WANT TO TALK a little bit about why I chose to run for STC President. The main reason was because I wanted to give back. My membership in STC has been incredible, and has afforded me opportunities for leadership development that I was not offered in my workplace at all. Through the years of my STC journey, I have been an officer in the Rochester Chapter several times, and a Director on the Board from 2013 through 2015. These were great experiences for me that stretched me far beyond anything I had been comfortable with.

After that, I moved to the Community Affairs Committee and started building an outreach team to help support our community leaders, having been a community leader myself. I took a few years off for personal reasons and to reinvigorate. I applaud Alyssa Fox and Jane Wilson—Jane is entering her seventh year on the board—for their stamina and perseverance over the years.

We're in very complex times, and the issues that are facing STC are common to membership organizations across the world. Membership organizations were built by baby boomers. Most of the boomers have retired or are in the process of doing so. When they built an organization, they pretty much expected to stay in that organization for life, or at least as long as their career was active. We're not in that kind of scenario now. People will join an organization, stay three or four years, and then move on as their interests and careers change. That makes it especially challenging for STC, because we face a constant churn of new members coming in, older members retiring, and members who have been here for a few years moving on to other things.

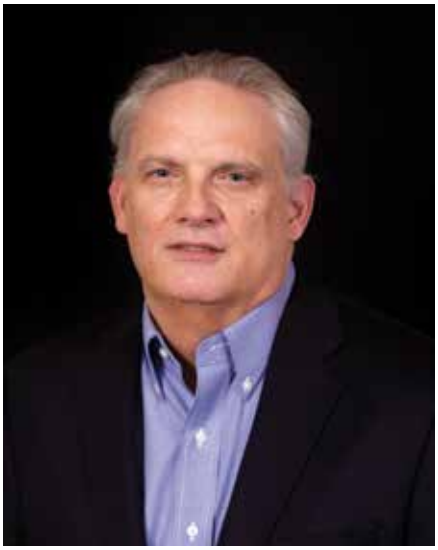
I expect us to get through this year. I expect us to build a sustainable future. We will make whatever changes we need to make to do that. But we need to make changes in a positive sense, not just in terms of reducing expenses. As STC's Treasurer Jim Bousquet has said, we've done about as much cost-cutting as we can do; we have a very limited number of staff to execute the direction that the Board gives them. We're going to need your help on this. This is a bit of a recruitment conversation today, but I expect us to create a sustainable future. That means we're going to build for tomorrow. You'll see new models in terms of how STC works.

I know there's been an opinion over the years of "What is with this Board? Why can't they figure this out?" But this Board is a very sharp, talented, and devoted group of people who want to make STC succeed and grow.

We'll be looking at growth mechanisms this year to build membership and not just try to survive. I did not run so that we would survive; I ran so that I can work with a very talented group of people to build STC into whatever new form it needs to take. I encourage you to come along with us and help us do that. We'll have new opportunities for engagement for members and for involvement in the Society. Expect increased opportunities for membership engagement and for improving the membership experience.

We have a significant percentage of members who are in communities; we have a larger percentage of members who are not in communities at all. These two groups get very different membership experiences.

So one of the things that we will look at this year is how to improve our membership experience overall. How do we provide what members need for their career growth? A lot of cutting-edge things are starting to happen here. Information 4.0, micro content, and other new concepts and new areas that we're starting to move into.



I challenge you to invest your time, invest your resources. You're here. You're committed to this organization, or you're 127 people who could not find the way out to dinner tonight and decided to join us instead. But I want you to get involved. If there are opportunities to mentor others, mentor younger communicators, please consider doing so. Mentor others! Invite others to join! Share what STC has done for you! There's a reason you all are here tonight. You all are passionate about the organization or you honestly would not be attending a business meeting the end of the day like this. So share that passion! Get people excited about STC! This is not all about doom and gloom; it's about building something new for the future. And I believe we can do it. I wouldn't be here, and our Board wouldn't be here, if we didn't believe that. So share what STC has done for you.

I'd also like to see us invest in the future. As you all picked up your red cards, there was a form sitting there for our scholarship program. During the three years I was not on the Board, I was helping build a framework around the scholarship program. We have money in the scholarship program, but we do not have what we need in order to be

able to have a sustainable technical communication scholarship. So I invite you to contribute to that. You can do that online at *https://www.stc.org/scholarship/*. I'm not passing a boot or anything like that—although it was tempting to get Alyssa to bring cowboy boots and we'd use that for donations. But take a look at this. If we get a lot of members contributing small amounts of money, we can offer scholarships, we can invest in our future; and our future is our students.

There's often been questions like "Why doesn't the Board tell us more about what's going on? Why aren't they more transparent? How do I talk to the Board? How do I get information to the Board about things that I'd like to see, or the changes that I might like to see?" I would encourage you to let us know what you want to see and what you want STC to be for you. We're not hiding. We're at *board@stc.org*. All of you can write us. The Board receives that email and we will respond to everything that comes in. So I'd like to, again, thank you all for an incredible opportunity. It's a bit daunting. But I'm absolutely looking forward to serving you all as your President for 2019 through 2020. Thank you.

Meet the 2019 Winners of STC's Publication Awards

STC'S PUBLICATION AWARDS recognize outstanding content from STC's *Technical Communication* journal and *Intercom* magazine and are awarded each year at the Technical Communication Summit & Expo Honors Event. This year's awards were presented on 7 May at the 2019 Summit in Denver, Colorado.

This year's selection for the Frank R. Smith Award for Outstanding Journal Article went to Jason Chew Kit Tham of University of Minnesota for his article "Interactivity in an Age of Immersive Media: Seven Dimensions for Wearable Technology, Internet of Things, and Technical Communication."

The citation for his article reads: *For a thorough review of definitions and characteristics of interactivity, and for establishing guidelines for design of effective user experiences in immersive environments. The author encourages technical communicators to focus on assuring seamless connections for devices, optimizing user control, developing context-sensitive and anticipatory user assistance, and developing tactile interactions.*

The *Intercom* Outstanding Article and Outstanding Guest-Edited Issue awards were also awarded at this year's Summit.

The award for Outstanding Magazine Article went to Jenifer Schlotfeldt and Courtney Bittner for their article "How Can You Leverage Data to Know You Have Effective Content?" in the September 2018 issue of *Intercom*.

The citation reads: *For showing how IBM increased its focus on customer's experiences with technical content and for distilling that case study into practical advice for improving content strategy.*

The *Intercom* Outstanding Guest-Edited Issue award went to Mark Lewis for the September 2018 issue of *Intercom* with a theme of "The Value of Content."

His citation reads: *For engaging the complexities of measuring and articulating the value of technical content and offering practical yet innovative solutions for addressing this important issue within organizations.*

Call for *Technical Communication* Journal Cover Illustrations

STC IS PLEASED to announce the call for cover illustrations for the February and May 2020 issues of *Technical Communication*. The deadline for submissions is 1 December 2019.

- For the February 2020 issue, we invite cover illustrations on the subject of ethics and social media.
- For the May 2020 issue, we invite cover illustrations on the subject of consulting: challenges and opportunities.

Cover illustrations might be diagrams, drawings, photographs, collages, infographics, cartoons, comic strips, or brief graphic narratives.

For either issue, please submit your cover illustration (approximately 20×20 cm or 8×8 inches) as a high-resolution (300 dpi or better) jpg file by 1 December 2019 to *tceditor@stc.org* with a brief explanation (100-200 words) of how your illustration addresses the cover subject. A five-member international jury of specialists will organize anonymous review of the submissions and choose each issue's cover illustration. Honorable mentions will be published inside the journal.

To view previous winning cover illustrations, please visit *www.stc.org/techcomm/propose-a-cover-illustration/*.

The Need for Clear and Conspicuous Terms of Service:

An Interview with Deborah Bosley

BY SCOTT ABEL | *STC Associate Fellow*

OVER THE PAST FEW DECADES, technical communication professionals have been at the forefront of publishing innovation. We've created useful standards, best practices, and innovative methods for developing, managing, personalizing, and delivering content. Despite our best intentions and disruptive innovations, much of our content still misses the mark. Sometimes, ironically, it's our language that gets in the way.

In this month's installment of "Meet the Change Agents," I interview professional communication strategist, Deborah Bosley, about the need for clear and concise language in technical communication deliverables. Bosley is the author of three books and dozens of articles, and she is a sought-after expert quoted on business television programs and in articles in business publications.

In the digital age, change happens quickly. This column features interviews with the movers and shakers—the folks behind new ideas, standards, methods, products, and amazing technologies that are changing the way we live and interact in our modern world. Got questions, suggestions, or feedback? Email them to *scottabel@mac.com*.

Scott Abel: Deborah, thanks for taking the time to speak with me about language clarity and its importance in professional technical communication. You've spent the better part of your career evangelizing the need for improvements to the way organizations communicate, but not everyone knows your work. For our readers who may be unfamiliar, can you tell us a little bit about yourself—who you are, what you do, and why you do it?

Deborah Bosley: Remember John Lennon's saying: "Life happens while you're making other plans"? Through a variety of twists and turns, I entered the academic world with a PhD in Rhetoric and Composition 12 years after finishing an MA in English. My focus, even early on, was helping students learn how to write for the world of work, for audiences and contexts far different from their university professors and their classroom. I've always had a pragmatic approach to writing (although I was a published poet, so my right brain was also active).

I had good fortune; both becoming a tenured professor of technical writing at UNC Charlotte and creating a thriving business (The Plain Language Group) as a professional communication expert. In both arenas, my mission statement has always been: "People have the right to understand information that affects their lives."

SA: Why did you decide to focus your professional energy on plain language?

DB: In the early 2000s, I was introduced to the very small (at the time) world of plain language. Obviously, there were a number of crossovers between technical writing and plain language (audience, context, style, rhetorical theory, etc.), but in 2008 when the financial sector crashed, Dodd-Frank and the Consumer Financial Protection Board began to require "clear and conspicuous" language in financial disclosures, and requests for my expertise increased significantly. The opportunity to work with financial documents to improve their ease of reading opened my eyes to the "anthropology" of participating in non-academic environments: assessing rituals, understanding language I wasn't accustomed to, learning the politics, etc.

Over time, I decided to pursue more interesting work; I couldn't continue to write jargon-laden, overly complex academic articles read only by people in my field. I believed in my mission statement and felt that I could practice that work more effectively outside the university environment, which led to me leaving academia.

SA: Your passion for plain language shines through in the presentations you give and the workshops you teach. It seems like your passion runs

much deeper than making financial documents easier to understand.

DB: You're right about that, Scott. I retired from the University of North Carolina Charlotte in 2013 to expand my consulting business. For me, advocating for the use of plain language is my living response to my mission statement. My work includes training, research and analysis, communication audits, usability testing, and—of course—revising written content for easier understanding and to meet regulatory requirements for "clear and conspicuous" language.

SA: I absolutely love the phrase, *my living response*. I think you're on to something there. It's an interesting turn of phrase. But I'd wager it's a challenge to sell your *living response* as opposed to selling services that help teams successfully adopt plain language as part of their communication strategy. So, that said, who invests in plain language?

DB: My clients have included, among others, Fortune 1,000/500/100 companies (Google, eBay, Bank of America, JPMorgan Chase, Wells Fargo), government agencies (Federal Trade Commission), higher education (the University of California Office of the President, University of North Carolina, GMAT), attorneys (Sidley Austin, LLP; Greater Boston Legal Services), and scores of others.

SA: Plain language is sometimes incorrectly thought of as synonymous with plain (American) English. Sure, it's true that some plain language projects result in plain (American) English content, but isn't it also true that plain language is an international movement that's focused on crafting clear and conspicuous content in any language?

DB: The field of, and emphasis on, plain language is international. Nelson Mandela required that the South African constitution be written in plain language because he believed that people should understand the laws they are to obey.

Currently, the General Data Protection Regulations (GDPR) of the EU is forcing U.S. companies to create plain language privacy policies. Australia, New Zealand, Canada, Great Britain, Mexico, Sweden, and a myriad of other countries require plain language in corporate and government content.

SA: Can you tell our readers about a plain language project of which you are particularly proud?

DB: While I was a board member of the Center for Plain Language, we helped educate legislators and "advocate" for Obama's Plain Writing Act of 2010, which requires that government agencies use plain language in content intended to explain benefits and services. The Center creates an annual report card on how well or how poorly agencies have met this requirement.

SA: How has your involvement in the field of technical communication prepared you for your career in plain language?

DB: The field of technical writing/communication certainly prepared me for the plain language world, and almost any technical writer seeking to create their own business can make that transition as I did. But regardless if one teaches technical writing or is a professional technical writer, the world of plain language is just one step away.

STC played a big part in both my academic and my consulting life. I was honored to have won STC's Jay R. Gould Award for Excellence in Teaching Technical Communication, and was an STC member for a dozen years or so.

SA: You've been quoted in the business press as someone who "believes that good writing is good business." What do you mean by that, exactly? And, is there any proof that your *beliefs* are more than just hunches?

DB: I probably should revise and say I *know* that good writing is good business. We have several studies showing that clear written communication increases customer trust, improves corporate reputations, decreases call-ins, and increases profits. For example, in an article published in *Intercom* (Bosley 2014), I discussed the results of usability testing we conducted for TIAA on a letter sent to participants nearing retirement. The original letter caused a surge in negative calls because clients couldn't understand it. The letter was meant to help them decide how much money to take out of their IRA (an IRS requirement). We conducted usability tests on professors of a certain age. Taking their responses, we revised the letter to be friendlier, more helpful, and less confusing. TIAA reported back to me that the new letter brought 97 percent positive calls and participants brought millions of new dollars into the company (they wouldn't tell me exactly how much).

A study by professors at Notre Dame determined that corporations that use plain language in shareholder communication increase the money investors bring into their company (Loughran & McDonald 2014).

Another study determined that using plain language improved comprehension of legal documents by 36 percent because readers found the content easier to understand, easier to comply with, strongly preferred, and caused fewer questions and complaints (Masson & Waldron 1994).

More recently, Joseph Kimble, Distinguished Professor Emeritus at WMU Cooley Law School, wrote *Writing for Dollars, Writing to Please*, which contains a myriad of studies showing the value brought to companies that use plain language.

Recent articles in *Forbes* (Vitasek 2018), the *Wall Street Journal* (Francis 2014), *Entrepreneur* (Marcus 2017), and other publications advocate for the importance of plain language in business.

In 2018, the Edelman Trust Index reported that the number one factor for trust in financial institutions is how easily they could understand Terms and Conditions. It's a very short step to trust as building customer loyalty, which leads to increased profits and fewer complaints.

SA: You specialize in helping organizations improve the way they communicate by helping them write and speak in *plain language*. Although those words—plain language—seem fairly straightforward, what is *plain language*, exactly?

DB: The widely accepted definition of *plain language* was developed collaboratively by the International Plain Language Federation, which includes the Center for Plain Language in Washington, DC. The definition is as follows:

> A communication is in plain language if its wording, structure, and design are so clear that the intended audience can easily find what they need, understand what they find, and use that information.

Now back to your original question. Plain language writers, like technical writers, focus on, among other things:

- The intended audience. What, if anything, can we assume they know? What has been their experience in similar situations?
- The context in which content will be read. How often have you tried to figure out if you could park somewhere while trying to read the sign driving 10 miles an hour?
- The "look and feel" of the content. Does the design lend itself to easy reading or scanning? Is our tone helpful and conveys our brand?
- Where content resides. Is it read online or in print?

Ironically, although we do care about the general reading level of adults (8th-9th grade is the average), having a PhD does not necessarily guarantee that someone would understand complex financial information. We also use a series of 12 to 15 proven writing and design strategies, such as the use of the active voice, to create plain language content. Again, many of these are strategies that technical writers also use.

SA: Plain language initiatives come to life for a variety of reasons. Highly regulated and risk-averse industries—like financial services, insurance, aerospace, life sciences, and healthcare—may adopt plain language in an attempt to maintain compliance with regulations, or to avoid future legal problems.

Can you give us an example of a situation in which regulations, rules, or laws may be the impetus for adopting plain language? What are the rules? Which organizations adopted them? Who are they designed to protect? And what do they require of those charged with producing technical and business information?

DB: There are a myriad of governmental regulatory agencies that require the use of plain language. Such agencies (particularly in the financial sector) that require plain language (or "clear and conspicuous" language) include:

- The Securities and Exchange Commission (SEC)—Portions of 10k filings.
- Health Insurance Portability and Accountability Act (HIPAA) of 1996—Privacy policies.
- The Employee Retirement Income Security Act (ERISA) of 1974—Employee benefits, summary Plan Descriptions.
- The Consumer Financial Protection Bureau, created by Dodd-Frank.
- Truth in Lending and Real Estate Settlement Procedures Act (TILA-RESPA)—Combined into one regulation for loan disclosures.
- Department of Labor—401(k) fee Disclosures in investments.

Perhaps the most wide-ranging new requirements are a result of the General Data Protection Regulation (GDPR) coming from the European Union (EU), which requires that any company doing business in the EU must write its privacy policy in plain language.

This rule affects thousands of businesses, including: Google, Amazon, Facebook, Twitter, Uber, Instagram, Apple, Microsoft, etc. For example, on almost every website today, there's a notification displayed to let us know that the site saves and uses cookies. That's a result of the new GDPR rules.

SA: Compliance issues aside, what are some common motivating factors that cause an organization to recognize the need for plain language? What problems are most commonly discovered in technical communication content?

DB: Unfortunately, many companies only adopt plain language practices when the force of regulation is upon them. However, in my decades of experience, the most common problems I have found—whether the sector is technology, health, or finance, and whether from private or public entities—are the following (in no particular order):

- Assuming the audience knows more than they do (or more than they need to know)
- Too wordy
- Too much jargon (business, legal, corporate, agency)
- Sentences are too long and paragraphs are too dense
- "Hiding" the main points
- Making the action unclear
- Organizing content for writers, not for readers
- Using too few effective design elements
- Lacking consistency in terminology
- Losing a focus on a helpful tone

SA: Humans make a lot of assumptions. Sometimes, we're right, but more often than not, our assumptions don't hold true. American comedian Ellen DeGeneres says, "You should never assume because when

you assume, you make an ass out of you and me, because that's how it's spelled: A-S-S-U-M-E." This humorous common wisdom holds some truth. In your experience helping organizations improve their communication, do professional writers make assumptions about their audiences that cause them to craft content that is less useful than it could be?

DB: Writers often assume that readers know more than they do. I like to tell writers to "Give people what they need to know, not what you want to tell them."

When technical writers have to work with SMEs, problems arise, because SMEs often want to tell the customers everything about a particular product. Remember years ago when the IT person would come to your office to fix a computer problem, and would launch into a dissertation on all the intricacies of the computer when all you wanted them to do was fix it? That situation still occurs but in written form.

People don't have the time or desire to grapple with more information than they absolutely need to perform a task or take action or understand a situation. "Less" almost always is better than "more." What people want is text that is easy to understand, to know what to do, to feel competent and confident, to trust the sender, and to trust the information. Although, of course, attorneys often get in the way, too, but that's another problem altogether.

SA: You've spent considerable time studying—and working to improve—the language used in terms and conditions (TC) and terms of service (ToS) contracts. This is super important work as it impacts virtually everyone who uses the Web. What are some of the most egregious mistakes organizations make when crafting terms and conditions and related content?

DB: Terms and conditions or terms of service are used in this context as entry ways into websites. Companies are not legally obligated to provide clear language in these types of documents. That's why almost no one reads them, and we all just click "I Agree."

The text of these agreements are more often than not dense, full of legal language, and long.

A 2017 Deloitte survey of 2,000 consumers in the United States found that 91 percent of people consent to legal terms and services conditions without reading them. For younger people, ages 18–34, the rate is even higher, with 97 percent agreeing to conditions before reading." Of the top 75 websites studied, the average length of their privacy policies was 2,514 words and all were filled with jargon, long sentences, and a lack of clarity in general.

To me, the most egregious error is simply thrusting undecipherable language on the public and putting us in a position of "extortion." You have to agree to gain access, but the text is too difficult to read; therefore, you are agreeing to something you don't understand.

What it will take is either regulations requiring clarity or a lawsuit that forces companies to do the right thing. In my experience, there's nothing like the force of law to make change.

SA: There's a movement afoot in some government sectors to require the production of clear and conspicuous content? Like quality content, clear and conspicuous content seems like a difficult term to define. Can you help our readers understand what clear and conspicuous means, and which government organizations (or other entities) are actively seeking to require it? Who benefits from plain language, and how do we know that they do?

DB: Two organizations in particular advocate for plain language: In the United States, the Center for Plain Language (*centerforplainlanguage.org*) and PLAIN—the Plain Language Association International (*https://plainlanguagenetwork.org*). PLAIN represents more than 20 countries that have adopted plain language in various entities both public and private, governmental, and non-profits.

Here's a list of the organizations around the world that are advocating for plain language: *https://plainlanguagenetwork.org/plain-language/plain-language-around-the-world/.*

In addition, in the United States, *plainlanguage.gov* is the organization that helps federal agencies meet the Plain Writing Act requirements—that government agencies provide information about benefits and services in plain language.

SA: How can an organization determine whether the content they produce is written in plain language? Are there tools designed to help uncover the problems?

DB: We've had a long-running dispute about the efficacy of readability tests, which tell you the grade level of content (whether online or print). Although I think these tests can give us a means of pushing an entity to take seriously the complexity of their prose, they are flawed in many ways.

The best way to determine problems in content creation is to have an expert analyze the original content, but more importantly, to run usability tests with members of the intended audience.

Although there are debates about how many customers you need to interview (one on one) to get feedback, in my experience, 12 people are all that are necessary to uncover most of the issues. After all, if information is written for customers or citizens, the best way to know if the material is effective is to ask the people who have to read it. In fact, it's crucial that everyone be reminded that we're not writing just for people, we're writing for readers.

SA: Where can our readers go to learn more about plain language? Are there books, organizations, or events that can help us learn what we need in

order to craft clear and conspicuous plain language content? Can you recommend the best places to start?

DB: I would suggest starting with the Center for Plain Language and PLAIN. In addition, see the Resources section at the end of this article for a few books that will help anyone interested in plain language and clear writing.

SA: Your company, The Plain Language Group, provides a variety of services to technical documentation and product content teams, including training. What should a technical communication team look for in a plain language training program? What are the most important elements of a successful plain language training program?

DB: I'm going to answer that question by giving you an example of the best training program we ever created, which was for TIAA-CREF. The program was successful not just because of the quality of our customized training, but because the company understood what it takes to make a writing program successful.

- The initiative started at the top from their CMO and head of HR.
- *They meant it.* They were serious about wanting to change the entire culture to focus on plain language to help their clients.
- We built a partnership so that almost everything we did was created in tandem with TIAA.
- We participated in meetings with stakeholders to determine their needs and concerns.
- Managers and team leaders had to participate in the courses and even the CMO and head of HR took the first course. They wanted everyone up and down the hierarchy to understand what plain language meant and how to use it.
- We developed with them a curriculum of five training programs that built on skills learned.
- The program was delivered to more than 1,000 investment advisors in three locations.
- We delivered a full day of training and then a half day two weeks later to give participants time to practice.
- We provided email feedback between sessions for any participant.
- TIAA built writing improvement into their annual evaluations (providing a great incentive to take clear writing seriously).
- We gave conference presentations together to talk about the success of the program.

Most companies think one day of training is all anyone needs, and often that's the best we're allowed to do. Of course, we argue that improving writing requires "practice with feedback over time." TIAA understood that approach.

So to answer your other question: The issue of finding the best training program also is a function of how much the company is willing to invest (in time, money, and people) to make the training a success.

SA: I want to thank you on behalf of our readers for taking time out of your schedule to help demystify plain language. You've been very generous with your time, and I appreciate you sharing your expertise with our members. Thanks!

DB: Scott, thank you for your devotion to improving the quality of content by supporting technical writers, content strategists, and the entire panoply of people who all want to make information more accessible.

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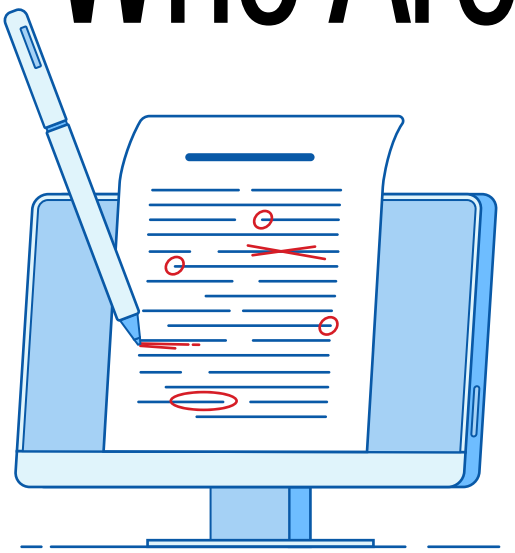
Who Are You Editing For?



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BY MICHELLE CORBIN | *STC Senior Member*

ALMOST TEN YEARS ago, I wrote a chapter for the book *New Perspectives on Technical Editing* titled "The Editor Within the Modern Organization." In that chapter, I narrowly focused on technical editors who edit for technical writers. I say narrowly, because ultimately fewer and fewer teams have dedicated technical editors on their teams (only four percent according to David Dayton's study more than 15 years ago). The other interesting statistic from that study is that 33 percent of technical communicators reported they were writer/editors, and 25 percent reported that they participated in peer editing. I don't think these stats have changed much over the years.

In this edition of my column, I will explore some technical editor tips and tricks for the technical writers and writer/editors who are not lucky enough to have a dedicated technical editor. These writers likely face these three very different editing tasks:

- Editing your own writing,
- Editing your SMEs writing, and
- Editing your peer's writing.

Before I talk about each of these three editing tasks, here is a bit about the different types of editing. While technical editors often explore many different types of editing (or levels of edit), Carolyn Rude and Angela Eaton simplify them down to just two types of editing: comprehensive editing and copy editing.

In comprehensive editing, you review the overall content, its organization, style, and visual design to ensure readers can find and use the information.

When copy editing, you review the sentences for correct spelling, punctuation, and grammar to ensure readers can understand the information.

Editing Your Own Writing

If you are a team of one, or if you are on a team where peer reviewing is not happening, you must often determine how to edit your own writing. In this scenario, I offer these tips.

- Build time into your schedule to write your draft, and then put it away for a couple of days. By putting some time between writing something and editing it, you will catch more errors or issues. You'll find missing information, organizational issues, and grammatical issues. Focus on the comprehensive editing, and don't get too bogged down in the copy editing.
- Some writers swear by editing their writing in a different format. They use a different font in the source file, print it out, or read it online in a PDF file or in the delivery format. By working in a different format, you'll likely find more errors or issues than if you work in your "familiar" source file.
- For copy editing, take advantage of whatever grammar checker or spelling checker you have available. Be sure to spend some time customizing it to focus on only those rules that matter to your team, and then let it be an "objective" set of eyes on your writing. I wrote an edition of this column about grammar checkers last year (Corbin 2018).

For example, I wrote this column one day, edited it the next day, and before sending it to the *Intercom* editor, I ran my grammar checker on it.

Editing Your SMEs' Writing

Many technical communicators today have the title of "Writer/Editor," and that's because they are often editing—or really revising—the writing of their subject matter experts (SMEs). Their SMEs will write the document and then hand it over to them to edit (revise) and publish. In most cases, the SMEs will do a final technical review, coming behind the writer/editor. In this scenario, you likely perform both comprehensive editing and copy editing as you revise the content. In some teams, the SMEs will want to see the changes you are making (be sure to use a track-changes feature of some kind), but on other teams, the SMEs will happily review the revised content. My only tip or trick here: over-communicate with your SME about their expectations relating to your editing (revisions) before you begin your

In Editing Matters, Michelle Corbin covers matters (topics) about editing that matter (are of consequence) to communicators of all kinds. Watch this space to understand more about editing and what you can do to improve the quality of your content. To suggest a topic or ask a question, contact Michelle at *michelle.l.corbin@gmail.com.*

edit *and* when returning your editing for the final technical review.

Editing Your Peers' Writing

I saved this scenario for last, because I think it is most important for teams without a dedicated technical editor to define and implement a peer editing (peer reviewing) process. If you've been reading my column over the past year, you know my soapbox: technical editing is a quality assurance process; all technical writing requires editing before it ships. To this set of writer/editors, I offer these tips:

- Create a standard, peer-editing checklist that everyone can use. Be sure to include a style guide cheat sheet for the most common issues that your team faces. If everyone works from and uses the same checklist, you'll get a more consistent review of your content across the team.
- Remember the physician's Hippocratic Oath: "First, do no harm." The technical editor's corollary to this oath is: "Always have a reason." As you do your peer review, especially as you do any copy editing, you need to make sure that you have a valid reason that is backed by your style guide—or any style guide—for suggesting a change to the writer's content.
- Be sure to show your work. Use a track-changes feature to let your peers see what you changed, and then insert comments for the changes to let them know why you suggested the change. By doing this, your peer will more readily accept your changes, or make changes of their own to address the issues that you identified.

Be Invisible

In the end, the ultimate goal of any technical editor is to be invisible. Users rarely notice great writing, because they are too busy getting their job done; users often notice writing that has not been edited, when content is disorganized, missing critical information, or riddled with grammatical errors or typos.

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Aspects of Attention

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BY KIRK ST.AMANT | *STC Fellow*

SUCCESSFULLY SHARING information involves holding and keeping an audience's attention. Yet the dynamics of attention are not random. They reflect how the brain processes information. Understanding these factors can help technical communicators create effective materials for different users.

Dynamics of Attention

Attention is a matter of sensory input. Our senses continually take in more information than our brain can actually process. Our minds address this situation by ignoring certain sensory information and paying attention other kinds of input. This means no one pays attention to everything. So what attracts and holds our attention? It depends on whether we are looking for a specific item.

We usually move through our days not searching for specific things. This means that what attracts and holds attention is often a matter of contrast. Imagine you are walking down the street not really looking for any particular thing. Suddenly, you notice a red flash and immediately look in that direction and focus in on what the item is. Why did it attract and hold your attention? Because it contrasted with everything else in that environment.

The color itself is not attention-getting; the way it contrasts with its surroundings is. If you were walking through a space where everything was red, no one thing would attract your attention because everything looks the same. In such situations, it would be more drab-colored—grey or tan—items that would stand out and draw your attention in that setting. But contrast isn't everything when it comes to attention.

Focus and Attention

Let's change the scenario. You are walking down the street looking for a Starbucks coffee shop where you will meet a prospective client. As you move through that space, you

This column examines how cognitive factors can affect technical communication and design processes. Email the editor at *stamantk@ecu.edu.*

Our senses continually take in more information than our brain can actually process…. So what attracts and holds our attention?

are focused on finding one specific thing—the iconic logo that identifies a location as a Starbucks. In fact, you are so focused on finding that design, you almost miss the flashing red "Don't Walk" sign and narrowly miss stepping out into traffic. How did this happen?

Your attention was so focused on looking for and finding one specific thing, your mind blocked out sensory input not connected to that task. In this way, items that readily catch attention in one setting (e.g., flashing red signal) can be overlooked in others.

So what does this mean for technical communicators?

Implications for Design

Consider interface design. You need to design an interface that draws a user's attention to a part of the screen where a feature is located. How do you do it? It depends.

If the task and the interface are new to the user, contrast is key. The related interface area needs to contrast markedly from other parts of the screen. This design will draw and hold the user's attention to instructions like "Click Here."

Now, imagine the interface is for an upgraded version of an application the user is familiar with. How does this affect design in terms of attention? In this case, the user expects certain aspects of the interface—those associated with a previously performed task—to be designed in a certain way. So when using the upgraded software, the user will look for a design that matches what they've encountered before. The upgraded interface must mirror these design expectations. If not, it will take the user more time to find the feature, if she finds it at all.

In this case, even if the desired feature contrasts with the interface, the user might not see it, for it does not match the thing that user is looking for.

Design Development

Problems can arise when both attention-getting features appear in the same interface design. In such cases, the user inherently focuses attention on looking for a specific thing—a design they've seen before. In this situation, however, they encounter a high-contrast feature that reflexively draws their attention, but does not mirror what they are looking for. In such cases, the mind must block the high-contrast item from its visual searching process to focus on finding a specific thing. Doing so takes extra effort, and such demand can cause users frustration or annoyance.

The same situation applies across other technical communication materials. How readers find information in printed manuals is governed by these same dynamics of attention. Such factors also affect how individuals use websites or access information via apps. As such, an understanding of these attention-related factors can help technical communicators enhance the usability of a range of communication deliverables.

Application of Concepts

What can technical communicators take from this? Three core ideas:

- ***Idea 1:*** If the item is completely new to the user, contrast is key to designing items that catch and hold the user's attention. The greater the contrast, the more likely items will gain a user's attention.
- ***Idea 2:*** If the item is based on something individuals have used before, create features that mirror these previous designs. The greater the similarity, the more likely items will catch the user's attention quickly.
- ***Idea 3:*** Do not mix both kinds of design features. Doing so can distract and confuse users looking for something they have seen before, but who get distracted by high-contrast ancillary features.

The key is knowing when to use each attention-getting option based on the user's prior experiences.

Final Thoughts

We encounter more kinds of sensory stimuli than ever before. Understanding how the brain allocates attention can be essential to navigating this landscape. By understanding the ways our brains process attention, technical communicators can create more effective materials. They can also use this knowledge to address dynamics of attention across different formats and technologies.

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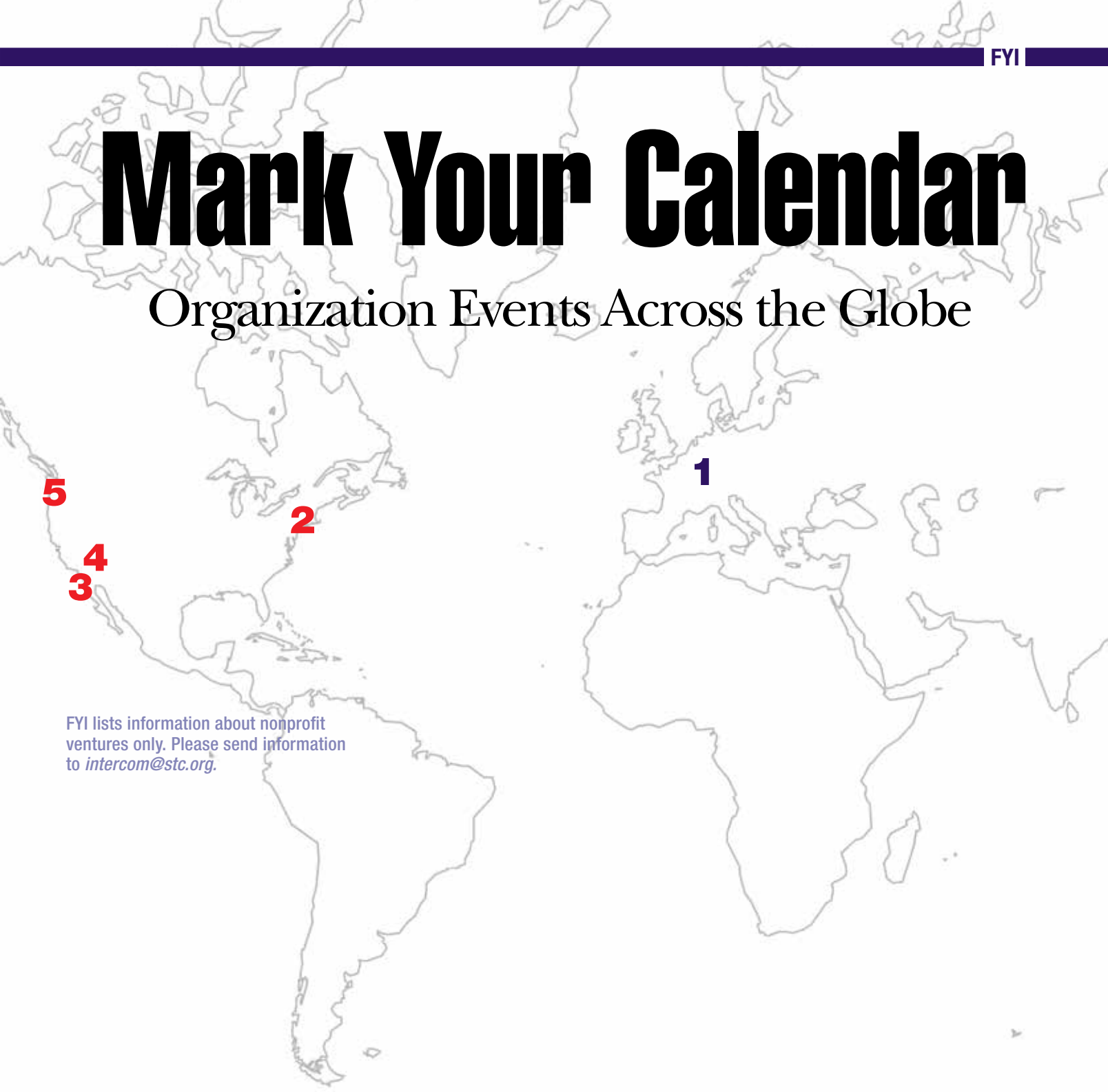

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The **IEEE International Professional Communication Conference (ProComm)** 2019 will take place in Aachen, Germany at the Super C Building of RWTH Aachen University from 23 to 26 July.
ProComm
https://attend.ieee.org/procomm/
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2 10-12 Oct
The **Council for Programs in Technical and Scientific Communication (CPTSC)** will be holding its annual conference 10–12 October 2019 at West Chester University in West Chester, Pennsylvania.
CPTSC
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3 20-22 Oct
The **Public Relations Society of America (PRSA)** will be holding its annual conference 20–22 October 2019 at the Marriott Marquis San Diego Marina Hotel in San Diego, CA.
PRSA
http://apps.prsa.org/Conferences/InternationalConference/

4 23-26 Oct
The **American Translators Association (ATA)** will hold its 60th annual conference 23–26 October 2019 at the Palm Springs Convention Center in Palm Springs, CA.
ATA
https://www.atanet.org/conf/2019/

5 28 Oct-1 Nov
The **Human Factors in Ergonomics Society (HFES)** will be holding its annual conference 28 October-1 November 2019 at the Sheraton Grand Seattle.
HFES
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Welcome Home: Volunteering with the Warriors' Watch Riders

BY MARYKAY "MK" GRUENEBERG | *STC Fellow*

WHEN MY SON was away at Marine Corps boot camp in the winter of 2007, I was searching for something I could do to help our troops. Another Marine mom suggested I volunteer for the USO. I thought that was a great idea, and I signed up right away. One day, shortly after starting volunteering at the USO center at O'Hare airport, I had the honor of attending my first military homecoming. I joined several other USO volunteers and went to the gate with balloons and flowers to cheer for an Army unit just returning from Iraq. We got everyone involved in the cheers and applause. It was a great time. There was also a group of bikers that joined us. One of the bikers said to me, "If you think this was cool, you should join us when we do a Welcome Home escort." That biker was a member of Warriors' Watch Riders. I joined him the following week on a Welcome Home mission for a young Marine returning from Iraq. I was immediately hooked and have been a member ever since.

Warriors' Watch Riders (WWR) is not a "motorcycle club." Rather, we are a group of bikers, non-bikers (those in cars are called "cagers"), veterans, and non-veterans, but most of all, Americans. Our missions are quite varied, but always with one goal: bringing attention to our troops.

We do flag lines and escorts for many different reasons. We provide Welcome Home escorts for individuals or whole units of troops returning from deployment. We do send-offs for troops who are getting ready to deploy overseas. We stand a flag line of protection and honor for dignified transfers when our fallen return home. We also provide flag lines and escorts at funerals and memorials at cemeteries. We do long overdue welcomes homes for those veterans who never received a proper "Thank You"—especially for our WWII and Vietnam veterans. When we cheer and yell "welcome home," many of the Veterans cry at the sight. So many times, as I hug or shake the hand of a WWII Veteran, I hear "This is the first time anyone has ever said that to me." And that is why I do what I do.

One of my favorite "belated" Welcome Home missions was for a couple of WWII Veterans celebrating their 71st wedding anniversary. They were both Army veterans who met during the war. She was his nurse when he was injured, and it was love at first sight. A group of about 40 motorcycles and a dozen cars showed up at their home to let them know their service was never forgotten, and we gave them a long overdue "welcome home." Tears flowed all around, but it was a wonderful mission.

I deal with technical communication all day during my 9-5 life. But, in my off hours, I deal with another kind of communication—one where I get to proudly bring awareness to our troops, one soldier at a time. The vision statement of the WWR is: "The Warriors' Watch Riders envision a day when every member of the United States Armed Forces, at home and abroad, and their families, feel appreciated, honored, respected, and loved by the citizens they risk their lives to protect."

I am honored at every mission, and a tear comes to my eye every time I get a chance to say "welcome home." I am doing my part to make sure that "Never again will an American warrior be scorned or ignored."

MARYKAY GRUENEBERG *(*marykay.stc@gmail.com*) has been a professional technical communicator for 35 years. She is a Certified Professional Technical Communicator and an STC Fellow. She believes in the importance of communication in every facet of life and enjoys helping to demystify technical things. She currently is a Senior User Assistance Developer at SAP. She has presented internally at SAP, as well as at LavaCon, Spectrum, and Leadership Days at STC Summits.*

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